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**PSYCHOPHARMACOLOGY  
ABSTRACTS**

NATIONAL INSTITUTE OF MENTAL HEALTH

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# CONTENTS

	<i>Page</i>
ABSTRACTS . . . . .	133
<i>Preclinical Psychopharmacology</i>	
Chemical Synthesis, Isolation and Characterization . . . . .	133
Drug Development (Preclinical Screening, . . . . .	136
Mechanism of Action - Physiological, Biochemical and Pharmacological . . . . .	139
Mechanism of Action - Behavioral . . . . .	216
Toxicology and Side Effects . . . . .	253
Methods Development . . . . .	256
<i>Clinical Psychopharmacology</i>	
Early Clinical Drug Trials . . . . .	260
Drug Trials in Schizophrenia . . . . .	267
Drug Trials in Affective Disorders . . . . .	279
Drug Trials in Neuroses . . . . .	290
Drug Trials in Miscellaneous Diagnostic Groups . . . . .	297
Psychotomimetic Evaluation Studies . . . . .	312
Mechanism of Action - Physiological, Biochemical and Pharmacological . . . . .	315
Mechanism of Action - Behavioral . . . . .	338
Toxicology and Side Effects . . . . .	349
Methods Development . . . . .	367
<i>Miscellaneous</i> . . . . .	368
AUTHOR INDEX . . . . .	A-7
SUBJECT INDEX . . . . .	S-63

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## ABSTRACTS

### PRECLINICAL PSYCHOPHARMACOLOGY

#### 01 CHEMICAL SYNTHESIS, ISOLATION AND CHARACTERIZATION

**120529** Koslow, S. H.; Cattabeni, F.; Costa, E. Laboratory of Preclinical Pharmacology, NIMH, Saint Elizabeth's Hospital, Washington, DC 20032 Norepinephrine and dopamine: assay by mass fragmentography in the picomole range. *Science*. 176(4031):177-180, 1972.

Assay of norepinephrine and dopamine by mass fragmentography in the picomole range is reported. Gas chromatography - mass spectrometry makes possible the simultaneous measurement of norepinephrine and dopamine in concentrations of 0.1mg tissue samples. Specificity of the assay is confirmed both by the retention time of the compound and by the mass to charge ratio of the fragments recorded. The sensitivity is of the order of 0.5picomole, and linearity of the response is maintained up to at least 200picomoles. 11 references. (Journal abstract modified)

**121285** Kapadoa, Govind J.; Hussain, Mehdi H.; Rao, G.Subba. Department of Pharmacognosy and Natural Products, College of Pharmacy, Howard University, Washington, DC 20001 Peyote and related alkaloids XIV: mescaloxyllic acid and mescaloruvic acid, the novel amino acid analogs of mescaline. *Journal of Pharmaceutical Sciences*. 61(7):1172-1173, 1972.

The synthesis and identification of mescaloxyllic and mescaloruvic acids as trace constituents of the peyote cactus are reported, Mescaloxyllic acid was synthesized by reacting glyoxylic acid and mescaline in methanol at pH 5 in the presence of a reducing agent. Mescaloruvic acid was obtained by refluxing alpha-chloropropionic acid and mescaline in dioxane. As characterized by NMR and mass spectrometry, the two synthetic acids were found to be cyclic in nature. The role of these acids in the biogenesis of the peyote alkaloids is currently being investigated, as is the biological activity of the new compounds. 3 references.

**121851** Stewart, Walter W. Biological Laboratories, Harvard University, Cambridge, MA 02138 Comments on the chemistry of scotophobin. *Nature* (London). 238(5361):202-209, 1972.

The referee of a paper dealing with the identification, isolation and synthesis of scotophobin doubts the validity of the isolation, the proof of purity, the amino acid analysis, chemical and mass spectrometric evidence and the comparison of the natural with synthetic material as set forth by the authors. The isolation is not described in sufficient detail to permit other investigators to repeat the process; the intended proof of purity indicates that the isolated material is a mixture; the amino acid analysis contains an internal contradiction; and crucial information on the possible presence of minor components is lacking. The most important consequence of the paper is the possibility of checking the reproducibility of their bioassay in a simple way. If the bioassay is reproducible, the next goal should be to determine by rigorous experiments whether the observed effect is a true chemical transfer of learning or is a consequence of a less specific mechanism. 45 references.

**122246** Grant, Frederick W.; Greene, James. Research Division, Marcy State Hospital, Marcy, NY 13403 Phototoxicity and photonucleophilic aromatic substitution in chlorpromazine. *Toxicology and Applied Pharmacology*. 23(1):71-74, 1972.

The primary photochemical events involved in the solar irradiation of aqueous solutions of chlorpromazine under anaerobic conditions were studied. Aqueous solutions of chlorpromazine, exposed to sunlight in the absence of oxygen, were converted within minutes to promazine and 2-hydroxypromazine. The aromatic nucleophilic substitution of the 2-chloro substituent of photoexcited chlorpromazine was found to be a general reaction with a variety of nucleophiles. It is concluded that the photoallergic reactions which often occur following treatment with chlorpromazine are, in fact, uniquely associated with the 2-chlorophenothiazines, which include chlorpromazine, prochlorperazine, and perphenazine; a mechanism of antigen formation is suggested. These findings suggest caution in the use of these agents where phototoxicity may be a factor. 6 references. (Author abstract modified)

**123841** Lee, Fred G.H.; Suzuki, Joseph; Dickson, Donald E.; Manian, Albert A. Regis Chemical Company, 1101 N.Franklin St.,

Chicago, IL 60610 **Synthesis of 7,8-dihydroxychlorpromazine and analogs.** *Journal of Heterocyclic Chemistry*. 9:387-392, 1972.

7,8-Dihydroxy derivatives of chlorpromazine, promazine, phenothiazine, and 7-methoxy-8-hydroxychlorpromazine and its nor1 analog were prepared through multistep syntheses. Structures were confirmed by chemical and spectroscopic evidence. The unusual nmr spectral shifts in several of these compounds are discussed. 13 references. (Author abstract)j

125359 Heindel, Ned D.; Ho Ko, C.C.; Birrer, Richard B.; Merkel, Joseph R. Department of Chemistry, Lehigh University, Bethlehem, PA 18015 **Antibacterial activity of o-amino-N-hydroxybenzenesulfonamides.** *Journal of Medicinal Chemistry*. 15(1):118-120, 1972.

The synthesis and antibacterial activity of some o-amino-N-hydroxybenzenesulfonamides and 1, 2, 4-benzothiadiazines are presented. A free o-amino and an N-hydroxysulfonamido or N-alkoxysulfonamido group appeared to be essential for inhibitory activity, since neither the heterocyclics nor the N,N-dimethyl analogs displayed any measurable activity. Methylation of the sulfonamido hydroxy group had no appreciable influence on antibacterial effects, indicating that the hydroxy group is probably not directly involved in binding. Decrease in activity of methyl analogs probably has steric origins. The two most potent compounds, 2-amino-4,5-dichloro-N-hydroxybenzenesulfonamide and 2-amino-4,5-dichloro-N-methoxybenzenesulfonamide, strongly inhibited *Mycobacterium marinum*. The o-aminobenzenesulfonamides might interfere with either the synthesis or function of folate. A chelation type inhibition might occur. 12 references.

125748 Sreenivasan, V.R. Chicago Police Crime Detection Laboratory, Chicago, IL **Problems in identification of methylenedioxy and methoxy amphetamines.** *Journal of Criminal Law, Criminology, and Police Science*. 63(2):304-312, 1972.

Spectroscopic properties of methoxy and methylenedioxy amphetamines are presented for purposes of identification by means of IR, NMR, and mass spectrometry methods. Some of the new phenylethylamines which have come into the hands of drug abusers are discussed, as well as the inherent difficulties in the methods of identifi-

cation by various spectroscopic methods. 9 references.

126248 Cattabeni, F.; Racagni, G.; Costa, E. Institute of Pharmacology and Pharmacognosy, School of Pharmacy, University of Milan, 20129 Milan, Italy **Methamphetamine, fenfluramine and their metabolites: identification and subcellular localization in rat brain homogenates.** (Unpublished paper). Washington, DC, NIMH, 1972, 21 p.

Mass fragmentography (MF) is shown to help in identifying picomole amounts or less of amphetamine (A), methamphetamine (MA), fenfluramine (F) and their metabolites in rat brain tissue. The subcellular distribution and localization of norfenfluramine (NF) in brain homogenates is also reported. The localization of F and the changes with time of the brain concentration of F, A, and MA metabolites are related to the time course of brain monoamine depletion elicited by MA, F, and A. It is shown that NF is localized in synaptosomes and, therefore, because of this location, NF might interfere with specific storage mechanism for 5-hydroxytryptamine (5-HT) in nerve terminals. This impairment of 5-HT binding agrees with the independent finding that large doses of F or NF increase the synthesis of brain 5-HT while they reduce the 5-HT storage. 28 references.

130163 Seth, Shiv Kumar. Ohio State University **Anticonvulsants and psychotherapeutic agents of known absolute configuration.** (Ph.D. dissertation). Dissertation, Abstracts International. Ann Arbor, Mich., Univ. M-films, No. 72-21014 HC\$10.00 MF\$4.00 84p.

Optically pure acetyl-D(R)- and L(S)-N-(p-substituted phenyl) succinimides and glutarimides, where the p-substituent=H, Cl, Me, MeO and NO<sub>2</sub> were synthesized from amino acids of known absolute configuration. The neurotoxic doses, anticonvulsant potencies, protectives indexes and effects on minimal seizure threshold were compared with similar values concomitantly determined for clinically useful anticonvulsants. The p-unsubstituted succinimides were among the least toxic drugs, where the reverse was observed for the p-unsubstituted glutarimide analogs. The PI's for D(R)-p-NO<sub>2</sub>-glutarimide and D(R)- or L(S)-p-MeO-glutarimides compared favorably with diphenylhydantoin when evaluated against MES. All other compounds in the glutarimide series, except D(R)-p-Me, also demonstrated signifi-

cant selective anticonvulsant activity against maximal seizures. The PI's for D(R)-p-NO<sub>2</sub>-glutarimide, D(R)- or L(S)-p-MeO-glutarimide and D(R)-p-H- succinimide compared favorably with standard drugs known to protect against minimal seizures (s.c.MET). In contrast, L(S)-p-Cl- succinimide and L(S)-p-Me-succinimide enhanced seizure susceptibility and decreased seizure threshold. (Journal abstract modified)

**130913** Minami, Iwao; Hara, Yukio; Usui, Yoshiro. Takeda Chemical Industries, Ltd., Japan Studies on benzodiazepines II: the new synthetic methods of 1,4-benzodiazepines. *Journal of the Takeda Research Laboratories (Osaka)*. 31(1):11-18, 1972.

The syntheses of 2,3-dihydro-N-methyl-2-oxo-5-phenyl-1H-1, 4-benzodiazepine-1-carboxamide (III), having a variety of pharmacological properties such as anticonvulsant, muscle relaxant and taming effects, were attempted from 2-aminobenzophenones(I). 2,3-Dihydro-N-methyl-7-nitro-2-oxo-5-phenyl-1H-benzodiazepine-1-carboxamide (IIIc), having the strongest pharmacological activities, was synthesized from 2-chloro-5-nitrobenzophenone (XI) via 1-02-(a-iminobenzyl)-4-nitrophenyl-1-bromoacetyl-3-methylurea (XVI). 1,3-Dihydro-5-phenyl-2H-1, 4-benzodiazepin-2-ones, serving as useful intermediates of III, were synthesized by a one step reaction of anthranils with glycine ethylester in the presence of a base and an acid. 18 references. (Author abstract)

**132802** Nador, K.; Scheiber, P. *Chemisches Institut der Tierärztlichen Universität, Budapest, VII, Lander Jenő u.2, Hungary /Structural analysis of tropines: structure of benzoyltropine and benzoyl-psi-tropine (tropacocaine) and their cholinolytic actions./ Konformationsanalyse der Tropeine: Konformation des Benzoyltropins und Benzoyl-psi-tropins (Tropakokain) und ihre cholinolytische Wirkung. Arzneimittelforschung (Aulendorf)*. 21(2):459-462, 1972.

The investigation of the structure of benzoyltropine and of benzoyl-psi-tropine was carried out by means of dipole moment and nuclear magnetic resonance (NMR) determinations. The influence of benzoyltropine on the cholinolytic receptors is possible because it resembles acetylcholine which has the N and CO groups necessary for the binding with the receptor, due to its conformation in an interatomic distance about 5.3 angstroms. Benzoyl-psi-tropine also shows such a cholinolytic

action, connected with the conformation IIa, in which the interprosthetic distance is analogous to benzoyltropine. Its lesser activity, compared to benzoyltropine, is based on conformation being only about 60%. The different pharmacological actions of the isomer esters may thus be due to the distances between the binding sites in the conformations as well as in the different configurations. 27 references.

**132873** Neal, J.M.; Sato, P.T.; Howald, W.N.; McLaughlin, J.L. Drug Plant Laboratory, College of Pharmacy, University of Washington, Seattle, WA 98105 *Peyote alkaloids: identification in the Mexican cactus *Pelecyphora aselliformis* Ehrenberg. Science*. 176(4039):1131-1133, 1972.

A phytochemical examination of the Mexican cactus *Pelecyphora aselliformis* Ehrenberg, analyzing the alkaloid content of the plant, is described in an attempt to explain its reputed uses by Indians as stimulants, inebriants, narcotics or hallucinogens. Analytical thin layer chromatography (TLC) of the phenolic alkaloid extract, and TLC and gas liquid chromatography (GLC) of the nonphenolic extract were used to identify or isolate hordenine, anhalidine, pellotine, 3-demethyl-trichocereine, mescaline, 3,4-dimethoxy-beta-phenethylamine, and the N-monomethyl derivatives of mescaline and 3,4-dimethoxy-beta-phenethylamine in the alkaloid extracts. All 8 alkaloids identified in the cactus have previously been detected in *Lophophora williamsii*. This is the first report of the presence of mescaline in any North American cactus species other than peyote, although mescaline has been found in several South American cacti. The content of mescaline detected in *P.aselliformis* is so small that it is questionable whether the concentration is sufficient to cause physiological effects upon ingestion. 23 references.

**133297** Grubner, I.; Klinger, W.; Ankermann, H. Institut für Pharmakologie und Toxikologie, Friedrich-Schiller-Universität, 69 Jena, East Germany /A study of various substances and classes of substances for inductor properties: II. communication./ *Untersuchung verschiedener Stoffe und Stoffklassen auf Induktoreigenschaften. II. Mitteilung. Archives Internationales de Pharmacodynamie et de Therapie (Ghent)*. 196(2):288-297, 1972.

Inductor properties in the metabolism of drugs were studied in male Wistar rats. The criteria



used for evaluation of induction were: hexobarbital sleeping time, ascorbic acid excretion in the urine, and the determination of amidopyrine-N-demethylation activity by liver supernate following centrifugation at 9000 g x 20 min. By this means it was possible to confirm the marked induction effects of tri-o-cresylphosphate; the hexobarbital sleeping time was down to zero and the demethylation activity was significantly raised, as was the ascorbic acid excretion. These criteria also established spironolactone as an inductor, but only at low dose levels. Inhibitory substances are listed as well. 36 references.

**133523** Sawada, H. Department of Legal Medicine, Gifu University School of Medicine, Tsukasa-Machi 40, Gifu, Japan **An urinary metabolite of bromazepam.** *Experientia* (Basel). 28(4):393-394, 1972.

In connection with the evaluation of bromazepam, 7-bromo-1,3-dihydro-5(2-pyridyl)-2H-1,4-benzodiazepin-2-one, as a psychotropic drug in the control of ambulatory schizophrenics, an investigation was conducted in the isolation and characterization of its urinary metabolites following administration of bromazepam to dogs and to rabbits. The drug was administered orally in a single dose of 200mg/kg to rabbits and 50mg/kg to dogs, and urine was collected during 48 hours. Hydrolysis of glucuronides was carried out by the method employing beta-glucuronidase. From the spectral and elemental analysis data, the structure of the metabolite under investigation was assumed to be a 3-hydroxylated derivative of 2-amino-5-bromo benzoylpyridine. The majority of the metabolite was excreted as the glucuronide conjugated form in the urine. 1 reference.

## 02 DRUG DEVELOPMENT (PRECLINICAL SCREENING)

**121074** Taberner, P.V.; Rick, J.T.; Kerkut, G.A. Department of Physiology and Biochemistry, The University, Southampton, England **The action of gamma-hydroxybutyric acid on cerebral glucose metabolism.** *Journal of Neurochemistry*. 19(2):245-254, 1972.

Experiments were performed to study the effect of gamma-hydroxybutyric acid (GHB) on glucose metabolism in vivo and in vitro in rats and mice. D-01-14C0glucose, D06-14C0glucose, and D-04-14C0glucose were used to give stock solutions of known specific activity. Administration of

GHB is followed by sleep in rats and mice. GHB increased the 1-14C/6-14C ratio in expired CO<sub>2</sub> in mice in vivo by 300%. The same effect is obtained with slices of cerebral cortical grey matter from GHB treated rats, where the 1-14C/6-14C ratio is increased from 1.72 to 3.63, but not with homogenates of cerebral cortex, nor with slices of kidney or diaphragm. GHB specifically increases the activity of glucose-6-phosphate dehydrogenase in vivo in rat and mouse whole brain by 27%. The time course of this effect correlates with the sleeping time in both species. The activity of glucose-6-phosphate dehydrogenase is not altered in vitro by high concentrations of GHB. GHB stimulates O<sub>2</sub> uptake by slices of cerebral cortical grey matter by 24%, but it is not itself able to support respiration by the tissue. It is proposed that GHB specifically increases the activity of the pentose phosphate pathway in brain, and that this effect is mediated by an increase in glucose-6-phosphate dehydrogenase activity. 34 references. (Author abstract modified)

**131056** Saji, Yoshiaki; Mikoda, Takeshi; Ishii, Harumitsu; Sato, Hiroshi; Fukui, Hiroshi; Koike, Satoko; Fukuda, Tomoko; Nagawa, Yuji. Takeda Chemical Industries, Japan **Pharmacodynamic effects of 8-chloro-6-phenyl-4H-s-triazolo-(4,3a)(1,4)benzodiazepine (D-40TA), a new central depressant.** *Journal of the Takeda Research Laboratories* (Tokyo). 31(2):186-205, 1972.

In a study of the effects of 8-chloro-6-phenyl-4H-s-triazolo(4,3a)(1,4) benzodiazepine (D-40TA), a new central depressant, mice, rats, guinea pigs, albino rats, cats and dogs were administered D-40TA in a 5% gum arabic solution orally, intraperitoneally or intravenously in a 20% glycofufol solution. The hypotensive effect of D-40TA varied considerably depending on the animal species and whether they were anesthetized or not. In phenobarbitalized or alpha-chloralose-urethanized cats, intravenous injection of D-40TA (0.5-1.0mg/kg) caused marked and prolonged hypotension. In curarized, unanesthetized cats only prompt, transient hypotension was observed. In rabbits, even higher doses of D-40TA caused prompt and short lasting hypotension whether or not the Ss were anesthetized. D-40TA increased the carotid and femoral blood flows in anesthetized cats. The drug had minimal cardiac action in cat and rabbit preparations and in the isolated guinea pig's atria. The drug decreased respiratory amplitude and compensatory tachyp-

nea in cats and rabbits. 11 references. (Author abstract modified)

**133216** Hishmat, Orchidee H.; Hashim, A.A.; Shalash, M.R.; Nawito, M. University of Zambia, P.O.Box 2379, Lusaka, Zambia, Africa Some benzofuran-carboxamide derivatives with narcotic and analgesic activity. *Arzneimittel-Forschung* (Aulendorf). 22(1):158-160, 1972.

A series of alkyl, aralkyl and arylsulphonyl ethers of 4-methoxy- and 4,7-dimethoxy-6-hydroxybenzofuran-5-carboxamide were synthesized and then screened for their narcotic and analgesic effect on Wistar albino rats. The results indicate that 4,6,7-trimethoxy-benzofuran-5-carboxamide and 4,6,7-trimethoxy-N-(2,2,2-trichloro-1-hydroxyethyl)benzofuran-5-carboxamide possess light narcotic activity at a dose level of 100microg/g weight, while the other compounds tested were inactive. Analgesic activity could not be demonstrated in the material examined, except 4,7-dimethoxy-6-benzenesulphonyloxy-benzofuran-5-carboxamide, which was analgesic at 60microg/g weight. The tail test was found to be more sensitive than the heat test, the ED<sub>50</sub> being 60 and 80microg/g for the two tests, respectively. 17 references.

**133217** Nagaoka, Akinobu; Kikuchi, Kenzo; Nagawa, Yuji. Biological Research Laboratories, Takeda Chemical Industries, Limited, Jusonishinocho, Higashiyodogawaku, Osaka, Japan Pharmacological studies of new indole alkaloids, rugulovasine A and B hydrochloride: I. Effects of both alkaloids on cardiovascular and central nervous system, and smooth muscles. *Arzneimittel-Forschung* (Aulendorf). 22(1):137-142, 1972.

Two new alkaloids, derived from *Penicillium concavo-rugulosum* Abe, rugulovasine A and B hydrochloride (RA and RB), were tested for their pharmacological actions in dogs, ICR-JCL mice, adult Wistar rats, guinea pigs, rabbits, and cats. They produced hypotension and bradycardia in unanesthetized hypertensive rats and anesthetized normotensive cats. The minimum effective doses of RA and RB in the cats were 0.5 and 0.25mg/kg, respectively (i.v.). The effects of RA developed more gradually and were longer lasting. The behavioral effects of RA and RB were: bodily tremor, reflex hyperirritability, piloerection, and signs of sham rage. Either alkaloid depressed the spontaneous motor activities, prolonged the duration of loss of righting reflex caused by barbitu-

rate, and enhanced the similar potentiating effect of reserpine in mice. RA lowered the body temperature in rabbits, whereas RB raised it. The antiserotonic and oxytocic effects of these alkaloids were weak. Dogs showed sedation after injection of 1 to 2mg/kg RA; the injection of RB i.v. 0.1mg/kg or s.c. 0.5mg/kg showed an increased locomotion, urination and defecation at first, followed by profuse salivation and squeaking and remaining motionless with fearful behavior for about 1 hour. 23 references. (Author abstract modified)

**133296** Boissier, J.R.; Zebrowska-Lupina, I.; Simon, P. Unite de Recherches de Neuro-Psychopharmacologie (INSERM), 2 rue d'Alesia-- F 75 Paris 13, France /Psychopharmacological profile of prazepam./ Profil psychopharmacologique du prazepam. *Archives Internationales de Pharmacodynamie et de Therapie* (Ghent). 196(2):330-344, 1972.

The anxiolytic and antiaggressive effects of prazepam, 7-chloro-1 (cyclopropylmethyl)-1,3-dihydro-5,2 H-1,4-benzodiazepine-2-one, were studied psychopharmacologically in Swiss (CFLB) male mice and Wistar albino male rats, at various dose levels. At dose levels up to 4mg/kg, no change in behavior was noted. At 8mg/kg in mice and 16mg/kg in rats, a diminution in exploratory activities was seen; at doses of 32 and 64mg/kg in the mice and rats, respectively, muscular hypotonia and ataxia were observed, increasing with higher doses, the duration of the symptoms likewise increasing with higher doses. Results are represented diagrammatically for: the effect of prazepam upon spontaneous motor activity in the mouse, aversion response, exploration, open field test, sedative action, antiaggressive activity, analgesic activity, anticonvulsant activity, interaction with hypnotics, reserpine, oxotremorine, dexamphetamine, apomorphine, and the kinetic effects of prazepam. The drug is thus classed among the minor tranquilizers; it is sedative in action, promotes motor incapacitation, anticonvulsive action, a reduction of aggression and inhibition of suppressive conditioning. The drug is safe to use and has no major depressive action. 20 references.

**133302** Baker, W.W. Department of Neuropsychopharmacology, Eastern Pennsylvania Psychiatric Institute, Philadelphia, PA Excitatory responses following intracaudate injection of N-methyl-dl-aspar-

**tic acid.** Archives Internationales de Pharmacodynamie et de Therapie (Ghent). 196(2):226-234, 1972.

Chemical stimulation of the caudate in cats by means of N-methyl-dl-aspartic acid (NMA), an excitatory agent, was studied to discover the extent of participation of the caudate in modulating behavioral and electrocortical activities. In chronic cats, unanesthetized and anesthetized, intracaudate microinjections of N-methyl-dl-aspartic acid (NMA) produced a broad spectrum of excitatory responses which included: rage (only unanesthetized preparation), tremors and gross body movements, mydriasis and salivation. In the anesthetized preparations, intracaudate NMA also exerted an analeptic action in that it activated the cortex (abolished spindling activity), roused the animal with opening of eyelids, involuntary movements, vocalization, increased respiration and accelerated heart rate. These actions were transient and the animal lapsed back into an anesthetic state. However, upon supplemental injections of NMA, analeptic effects were repeatable without any evidence of cumulative action or tachyphylaxis. Caudate mediated NMA excitatory responses were not blocked by pretreatment with either local scopolamine (in contrast to carbachol) or tetracaine. It is concluded that the caudate participates directly in modulating motor, behavioral and electrocortical activities, and that the depolarizing action of local NMA disrupts inhibitory control in the caudate to produce extensive excitation of the CNS. 19 references. (Author abstract modified)

**133303** Schieferstein, G.J. Research Division, William H. Rorer, Inc., Fort Washington, PA **Central anticholinergic activity of: 2,2-diphenyl-4-(3-azabicyclo (3.2.2) non-3-yl) butyramide hydrochloride (SC-13639).** Archives Internationales de Pharmacodynamie et de Therapie (Ghent). 196(1):201-208, 1972.

SC-13639 (2,2-diphenyl-4-(3-azabicyclo (3.2.2) non-3-yl) butyramide hydrochloride) was compared with trihexyphenidyl, a well known centrally acting anticholinergic agent, for reversal of tremorine induced motor incoordination, duration of protection against this motor incoordination, protection against increasing doses of oxotremorine, and separation of central anticholinergic and locomotor stimulant activity. It was tested in male Charles River albino mice by intragastric administration. It was found more potent than

trihexyphenidyl in reversing ongoing tremorine induced motor incoordination, longer acting than trihexyphenidyl, approximately four times more potent in ability to antagonize oxotremorine induced motor incoordination, and had twice the separation of central anticholinergic and locomotor stimulant activities. It is concluded that SC-13639 may be able to control a central nervous system cholinergic overbalance that could not be controlled by trihexyphenidyl. 8 references.

**133304** Turnbull, M.J.; Slater, P.; Briggs, I. Department of Pharmacology and Therapeutics, University of Dundee, Dundee, Scotland **An investigation of the pharmacological properties of homocarnosine.** Archives Internationales de Pharmacodynamie et de Therapie (Ghent). 196(1):127-132, 1972.

Homocarnosine, structurally similar to gamma-aminobutyric acid (GABA), was examined for its pharmacological action on the central nervous system. Intracerebral injections of homocarnosine sulfate in female Wistar rats and intraventricular injections in rabbits were effected and, for seizure tests, graded doses of pentetrazole were administered to rats. Barbiturate sleeping time was observed. Heart rate and blood pressure, respiration, monosynaptic spinal reflex (in a cat) were recorded. The effects of the drug were investigated on single neurones in the brain stem of the cat, and electrical activity of the cerebral cortex were recorded in the rabbit. In the conscious rat, homocarnosine (by intraventricular injection) produced hyperexcitability, sometimes accompanied by convulsions, and, consequently, a significant effect on the susceptibility to pentetrazole induced seizures. Homocarnosine significantly shortened the period of anesthesia produced by i.p. administration of barbiturates. The drug appears to be devoid of any major peripheral or central effects involving the cardiovascular or respiratory systems. There was no effect on the monosynaptic reflex response (in the cat) nor on the spontaneous activity of 20 neurones out of 24; one was weakly excited and three were weakly inhibited. The EEG was only affected when convulsions occurred. 15 references.

**133306** Leonard, B.E. Pharmacology Department, N.V. Organon, OSS. **Holland Anti-tremorine effects of some mono- and diacyloxytropans.** Archives Internationales de Pharmacodynamie et de Therapie (Ghent). 196(1):93-97, 1972.



A number of esters, structurally related to tigloidine, have been investigated for their pharmacological actions with respect to tremor, salivation and hypothermia induced by tremorine in albino mice of the Alderley Park strain. The reduction in body temperature caused by tremorine was antagonized by 3beta-seneciolyxytropene. Of the other tropane esters tested, tigloidine was equally active; 3:6-ditigloyloxytropene and (0)-ditigloyloxytropene slightly antagonized the tremorine induced hypothermia at the highest dose used. None of the esters affected the tremor induced by tremorine; only (0)-3,6-di-(methylbutyloxy)tropane significantly reduced the salivation caused by tremorine. The antihypothermic action of 3beta-seneciolyxytropene may suggest a use for this compound in the symptomatic treatment of parkinsonism. 8 references.

133670 Sakai, Shigeru; Kitagawa, Sumio; Yamamoto, Hisao. Sumitomo Chemical Co., Takatsukasa, Takarazuka-shi, Hyogo-ken, Japan. Pharmacological studies on 1-Methyl-7-nitro-5-phenyl-1,3-dihydro-2H-1,4-benzodiazepin-2-one (S-1530). *Arzneimittel-Forschung* (Aulendorf). 22(3):534-539, 1972.

A new benzodiazepine derivative, 1-methyl-7-nitro-5-phenyl-1,3-dihydro 2H-1,4-benzodiazepin-2-one (S-1530), which was shown to have potent anticonvulsant, muscle relaxant and taming effects in animal tests is described. It has been shown to be of clinical value both as a sedative and as a hypnotic, and is practically nontoxic. The experiments were carried out in mice and included muscle relaxant, sedative, hypnotic and anticonvulsant activities. Taming effects were tested in fighting mice, cats, monkeys, and in septal rats; potentiation of hexobarbital sleeping time, conditioned avoidance response in rats, and effects on EEGs in rabbits were evaluated. The epinephrine antagonism, apomorphine antagonism, and methamphetamine tests were conducted in rats. The effects on motor activity were determined in methamphetamine treated mice; effects on stress ulcer in rats and hypothalamic pressor response in cats were noted. S-1530 had little effect on a conditioned avoidance response, epinephrine, apomorphine or methamphetamine induced behavior and stress ulcer, unlike the major tranquilizers. It may have antidepressive action. The drug synchronized spontaneous EEG and reduced the response on stimulation of the

reticular formation or the hypothalamus of the rabbit brain at low doses. A characteristic action was the response on the amygdala. The pressor response to stimulation of the hypothalamus was completely inhibited by administration of S-1530. 14 references.

133716 Pong, S.F.; Graham, L.T., Jr. Section of Neurobiology, Inst. of Psychiatric Research, Indiana Univ. Med. Center, Indianapolis, IN 46202. N-methyl bicuculline, a convulsant more potent than bicuculline. *Brain Research* (Amsterdam). 42(2):486-490, 1972.

Some of the pharmacological properties of N-methyl bicuculline are compared to those of bicuculline and pertinent results related to its mode of action are presented. Bicuculline is a relatively specific antagonist of gamma-aminobutyric acid (GABA) and has been used as a tool for the study of synapses in pathways in which GABA might function as an inhibitory transmitter. The solubility of bicuculline in aqueous solution, however, is highly dependent on pH and there has been considerable difficulty in administering bicuculline microelectrophoretically and intravitreally. It was therefore desirable to find a water soluble derivative of bicuculline possessing similar pharmacological effects. N-methyl bicuculline, a quaternary derivative, fits the requirements. N-methyl bicuculline was prepared by reacting bicuculline with excess methyl iodide in acetone, and by precipitating the quaternary compound with ether. This derivative is soluble in aqueous solutions. N-methyl bicuculline is about 30 times as active as bicuculline on a molar basis as a convulsant if injected intracisternally. When tested for its action of the electroretinogram (ERG) of the rat, N-methyl bicuculline was similar to that of bicuculline, but the quaternary compound was at least eight times as active and the oscillatory potentials lasted for about 4 hours in contrast to about 50 min for bicuculline. 27 references.

#### 03 MECHANISM OF ACTION: PHYSIOLOGICAL, BIOCHEMICAL AND PHARMACOLOGICAL

118853 Shaywitz, B.A.; Gormley, W.T.; Arnold, E.L.; Back, K.C. Department of Neurology, Yale University School of Medicine, New Haven, CT 06510. Mechanisms for the efflux of (14C)DOPA and (14C)dopamine from the CSF of rhesus monkeys. *Journal of Neurochemistry*. 19(7):1639-1648, 1972.

Clearance of (14C)DOPA and (14C)dopamine from CSF was investigated in anesthetized rhesus monkeys (*M.mulatta*) subjected to ventriculocisternal perfusion. The efflux coefficients, kVE, at tracer concentrations (3 to 5M) in the perfusate were 0.0487ml/min and 0.0325ml/min for (14C)DOPA and (14C)dopamine, respectively. Carrier DOPA (10mM) in the perfusate decreased the efflux of (14C)DOPA significantly, but carrier dopamine had no appreciable effect on the clearance of (14C)dopamine. These findings suggest that DOPA is cleared from CSF in part by a saturable mechanism which may be located in the choroid plexus, whereas dopamine leaves the ventricular system by passive diffusion. Radioactivity in the caudate nucleus immediately adjacent to the perfused ventricle averaged 15.5% and 12.6% of the radioactivity in the perfusates with (14C)DOPA or (14C)dopamine, respectively. These distribution percentages were similar to those found for various extracellular indicators after ventriculocisternal perfusion and may indicate that the efflux of intraventricularly administered exogenous DOPA and dopamine occurs in part through extracellular channels. (Author abstract)

**118913** Akera, Tai; Bordy, Theodore M. Department of Pharmacology, Michigan State University, East Lansing, MI 48823 **Effects of chlorpromazine free radical on brain and microsomal enzymes.** *Biochemical Pharmacology* (Oxford). 21(10):1403-1411, 1972.

The inhibitory effect of chlorpromazine free radical on microsomal enzyme activities was compared using a deoxycholic acid treated, rat brain microsomal fraction. The chlorpromazine - microsome mixture was exposed to ultraviolet light to obtain the chlorpromazine free radical inhibited microsomal preparation. (Sodium ion and potassium ion) ATPase activity was the most sensitive to the inhibitory effect of chlorpromazine free radical among the enzyme activities studied. Cholinesterase activity was significantly less sensitive, and magnesium ion ATPase and NADH cytochrome c reductase activities progressed even after the dissipation of chlorpromazine free radical whereas the inhibition of less sensitive NADH cytochrome c reductase activity did not progress with time. A nonenzymatic reduction of cytochrome c by chlorpromazine free radical was observed. It is concluded that chlorpromazine free radical selectively inhibits microsomal enzymes, and the selectivity seems to depend on the dif-

ference in affinity of these enzymes for chlorpromazine free radical. 23 references. (Author abstract modified)

**118988** Blum, Kenneth; Merritt, James H.; Wallace, Jack E.; Owen, Richard; Hahn, J.W.; Geller, Irving. Department of Pharmacology, The University of Texas, Medical School at San Antonio, TX **Effects of catecholamine synthesis inhibition on ethanol narcosis in mice.** *Current Therapeutic Research*. 14(6):324-329, 1972.

Ethanol induced sleep time was measured in mice after administration of chemical agents given to alter selectively brain monoamine levels. Pretreatment with the catecholamine synthesis inhibitor, alpha-methyl-p-tyrosine (alpha-MPT) significantly enhanced the ethanol sleep time response. This effect was lessened when L-DOPA was administered in combination with alpha-MPT. Enhancement of ethanol's effects through inhibition of catecholamine synthesis, supports the speculation that biogenic amines may be involved in ethanol's actions. 21 references. (Author abstract)

**118999** Halliday, Betty; Elliott, H.W. 3521 Webster Street, San Francisco, CA **Effects of morphine and calcium on respiration of rat brain slices.** *Pharmacology*. 7(1):1-11, 1972.

Since morphine has been shown to inhibit potassium stimulated oxygen uptake of rat brain slices incubated in calcium free Ringer's solution, experiments were done to clarify this finding. We found that altering conditions to favor morphine uptake resulted in inhibition of stimulated oxygen uptake by morphine when the slices were incubated in conventional Ringer's solution. These alterations consisted of (a) incubation of slices in 0.01M morphine, (b) incubation of slices in 0.01M KCl, or (c) pretreatment with 100mg/kg morphine 30 min prior to sacrifice. The data suggest that of permeability of the cell membrane is an important factor in the effect of morphine on the oxygen uptake of rat brain slices. 31 references. (Author abstract)

**119000** Kalant, H.; LeBlanc, A.E.; Guttman, M.; Khanna, J. M. Department of Pharmacology, University of Toronto, Toronto 181, Ontario **Metabolic and pharmacologic interaction of ethanol and metronidazole in the rat.** *Canadian Journal of Physiology and Pharmacology*. 50(2):476-484, 1972.

Metronidazole, added *in vitro*, did not act either as an inhibitor or as a substrate for the alcohol dehydrogenase activity of rat liver homogenates. Concentration curves of ethanol and acetaldehyde in the blood after an oral dose of ethanol were not altered by pretreatment with metronidazole; in contrast, disulfiram caused marked elevation of acetaldehyde levels. When given once only, metronidazole (or possibly a metabolite of it) exerted a mild central depressant effect of its own and produced a dose dependent increase in the intoxicant effect of ethanol. After repeated administration of metronidazole, synergism with ethanol was not seen. An incidental finding was the production of a volatile material during incubation of solutions containing NAD, which gives an acetone like peak in gas - liquid chromatograms. 24 references. (Author abstract)

**119001** Cooper, S.D.; Feuer, G. Department of Pathological Chemistry, University of Toronto, Toronto, Canada **Relation between drug-metabolizing activity and phospholipids in hepatic microsomes. I. Effects of phenobarbital, carbon tetrachloride, and actinomycin D.** Canadian Journal of Physiology and Pharmacology (Ottawa). 50(6):568-575, 1972.

The treatment of rats with phenobarbital caused a significant increase in hepatic microsomal content of protein and phospholipid in parallel with the induction of drug-metabolizing enzymes. In contrast, carbon tetrachloride significantly reduced microsomal protein, phospholipid, and drug-metabolizing enzyme activity. The opposing actions of these compounds were manifested mainly in the phosphatidylethanolamine, phosphatidylcholine, and lysophosphatidylcholine fractions. Actinomycin D was found to block all the effects of phenobarbital except for the increase in lysophosphatidylcholine which was inhibited only by about 50 percent. Actinomycin D alone significantly decreased drug-metabolizing enzyme activity and microsomal phospholipid content. 41 references. (Author abstract)

**119002** Dam, Mogens. Institute of Neurophysiology and Laboratory of Neuropathology, University of Copenhagen, Copenhagen, Denmark **The density and ultrastructure of the Purkinje cells following diphenylhydantoin treatment in animals and man.** Acta Neurologica Scandinavica (Supplement) (Copenhagen). 48(Supplement 49):1-65, 1972.

The pharmacology of diphenylhydantoin (DPH) is reviewed. Clinical observations during intoxication with DPH, as well as histological findings in cats and rats, have been reported by others as evidence of cerebellar damage. The number of Purkinje cells was counted in representative sections from the cerebella of 7 pigs treated with DPH and 17 untreated pigs. In the same way, the number of Purkinje cells was determined in two monkeys intoxicated for 43 and 30 days with 386 and 175mg/kg of DPH by mouth and in three untreated controls. Similarly 11 albino rats and 5 untreated rats were investigated. Electron microscopic examination of Purkinje cells was performed on sections from 3 to the treated and 3 of the untreated rats. The main result of the experimental intoxication in pigs, monkeys and rats was that the density of Purkinje cells in animals treated with DPH was within the range of variation in untreated animals. The previous reports of cerebellar involvement in animals may have been due to fixation artifacts, hypoxic lesions or to the fact that the method of estimating the density of Purkinje cells was not quantitative. In order to investigate the agent responsible for the loss of Purkinje cells in patients with grand mal epilepsy, the number of Purkinje cells was counted in sections from the cerebella of 32 patients with idiopathic grand mal epilepsy, 30 of whom had been treated with DPH. Ten controls were non-epileptic accident victims. The result of the investigation in the human subjects was that a low density of Purkinje cells was related to severe grand mal epilepsy rather than to heavy medication with DPH. It was thus concluded that there is no real loss of Purkinje cells in animals, and that it is due to the seizures rather than to DPH in patients. 191 references. (Author abstract modified)

**119030** Ng, Lorenz K.Y.; Chase, Thomas N.; Colburn, Robert W.; Kopin, Irwin J. National Institute of Mental Health, Mental Health Intramural Research Program, 9000 Rockville Pike, Bethesda, MD 20014 **L-dopa in parkinsonism: a possible mechanism of action.** Neurology. 22(7):688-696, 1972.

Biochemical determinations and studies of amine uptake and amine release were performed on slices of corpus striatum and frontal cortex taken from unanesthetized adult Sprague-Dawley rats. In some experiments, rats were pretreated with 6-hydroxydopamine. The slices of striatum took up exogenous serotonin and dopamine and



released them in response to electrical field stimulation; the addition of L-dopa to the superfusion medium in which the slices were placed also induced the release of these amines from both the striatal and frontal cortex tissues. The release of amines by L-dopa can be effectively blocked via the addition of D,L- $\alpha$ -methyldopahydrazine. Pretreatment with 6-hydroxydopamine significantly reduced the uptake of dopamine and norepinephrine by striatal and frontal cortex tissues; the uptake of serotonin was not affected. Similarly, the spontaneous and L-dopa induced release of dopamine from these tissues were significantly reduced in the brain slices from rats pretreated with 6-hydroxydopamine; the release of serotonin remained unaffected. Electrical stimulation also induced the release of dopamine formed within serotonergic neurons. It is concluded that the releasing action of L-dopa is dependent upon its conversion to dopamine and that a portion of exogenously administered L-dopa may enter central serotonergic terminals, undergo decarboxylation to dopamine, and then displace the endogenous indoleamine from vesicular stores. Dopamine thus formed within serotonergic terminals may then be susceptible to release as a substitute (false) transmitter, and may contribute to the clinical changes observed in patients with Parkinson's disease following the administration of L-dopa. 41 references.

**119031** Shaw, Walter N.; Fuller, Ray W.; Matsu-moto, Charles. The Lilly Research Laboratories, Eli Lilly and Company, Indianapolis, IN 46206 **Studies on the mechanism of amphetamine-induced lipolysis in the rat.** *European Journal of Pharmacology* (Amsterdam). 19(1):98-103, 1972.

d-Amphetamine, and to a much lesser extent l-amphetamine, increased serum FFA levels in fed but not in fasted rats. This increase was not altered by adrenalectomy, a finding which distinguishes an amphetamine induced from a natural lipolysis. Hypophysectomy, thyroidectomy, or pretreatment of the intact rat with cortisone abolished the lipolytic effect of amphetamine. These findings refute the release of adrenal catecholamines as the mechanism by which amphetamine elevates serum FFA and they present evidence against a mechanism by which catecholamines are released from adrenergic nerves in adipose tissue. It is suggested that the amphetamine acts centrally and involves neural or hormonal mediation. 32 references. (Author abstract)

**119032** Kuschinsky, K.; Hornykiewicz, O. Department of Psychopharmacology, Clarke Institute of Psychiatry, Toronto, Canada **Morphine catalepsy in the rat: relation to striatal dopamine metabolism.** *European Journal of Pharmacology* (Amsterdam). 19(1):119-122, 1972.

In rats, morphine, like chlorpromazine, produced catalepsy and raised striatal homovanillic acid levels. Analyses of the interactions between each of these cataleptogenic agents and naloxone, L-DOPA, and apomorphine strongly indicate that morphine influences striatal dopamine metabolism and produces catalepsy via a mechanism which differs from that by which chlorpromazine has its effects. 13 references. (Author abstract modified)

**119033** Fukui, Kuniaki; Shiomi, Hirohito; Takagi, Hiroshi. Department of Pharmacology, Faculty of Pharmaceutical Sciences, Kyoto University, Kyoto, Japan **Effect of morphine on tyrosine hydroxylase activity in mouse brain.** *European Journal of Pharmacology* (Amsterdam). 19(1):123-125, 1972.

The effects of morphine on the in vitro and in vivo activity of tyrosine hydroxylase in the mouse brain were investigated by measuring the conversion of C14-tyrosine to DOPA and catecholamine, respectively. In the in vitro experiments, morphine did not modify the activity of tyrosine hydroxylase in mouse brain homogenate, while in the in vivo experiments, the activity of tyrosine hydroxylase in the brain was significantly increased following the administration of 20mg/kg of morphine. It is concluded that, in vivo, morphine activates tyrosine hydroxylase activity via a feedback mechanism. 5 references. (Author abstract modified)

**119037** Fennessy, M.R.; Lee, J.R. Department of Pharmacology, University of Melbourne, Parkville, Victoria 3052, Australia **Comparison of the dose-response effects of morphine on brain amines, analgesia and activity in mice.** *British Journal of Pharmacology* (London). 45(2):240-248, 1972.

Motor activity in mice, and noradrenaline, dopamine, 5-hydroxytryptamine, and 5-hydroxyindoleacetic acid concentrations in the mouse brain were measured 30 min after subcutaneous injections of 0.1 to 100mg/kg doses of morphine. The encephalic noradrenaline concentrations were reduced by morphine injections from 2 to 20mg/kg; the noradrenaline concentrations were

not affected by doses of greater than 20 or less than 2mg/kg. The encephalic concentrations of dopamine were reduced by morphine injections of 1 to 20mg/kg, but were elevated by doses of greater than 20mg/kg. The brain 5-hydroxytryptamine levels were reduced by doses of morphine ranging from 1 to 20mg/kg; the levels of this amine were unaffected by morphine injections of greater than 20 or less than 1mg/kg. The 5-hydroxyindoleacetic acid levels were unaffected by morphine doses of 0.1 to 2mg/kg or by doses over 100mg/kg, were raised by a dose of 5mg/kg, and were lowered by doses of 10 to 50mg/kg. Doses of morphine above 5mg/kg caused increased motor activity in the mice; doses of 0.5, 1.0, and 2.5mg/kg caused decreases in activity; and a dose of 5.0mg/kg caused no change in activity. It is concluded that there is no simple relationship between the effects of morphine on the brain amines and the effects of the drug in analgesic tests and locomotor activity. 35 references. (Author abstract modified)

**119050** Hill, H.F.; Horita, A. Department of Pharmacology, School of Medicine, University of Washington, Seattle, WA 98105 **A pimozide-sensitive effect of apomorphine on body temperature of the rabbit.** *Journal of Pharmacy and Pharmacology* (London). 24(6):490-491, 1972.

The effect of apomorphine, a dopamine receptor stimulant, on the body temperature of the rabbit was investigated. In one experiment, apomorphine hydrochloride was administered intravenously to groups of 6 male rabbits and their colonic temperatures were monitored. The peak temperature elevation was directly proportional to the dose of apomorphine, with the hyperthermic effect being characterized by a short latency, a peak at about 45 minutes, and a duration of about 4 hours. The apomorphine also effected an increase in pupillary diameter, vasodilatation in the ear, and increased motor activity. When rabbits were treated with pimozide prior to receiving the apomorphine injections, the apomorphine induced gnawing behavior and ear vasodilatation was reduced; the pimozide had no effect on the apomorphine induced temperature elevation, however. It is concluded that apomorphine can produce a hyperthermic response which is temporally similar to d-amphetamine hyperthermia, and that hyperthermia can be induced in the rabbit by direct activation of dopamine receptors. Thus dopaminergic neurons in the CNS may

mediate the hyperthermic effect of d-amphetamine in this species. 4 references.

**119052** Mori, Masa-aki; Orguri, Kazuta; Yoshimura, Hidetoshi; Shimomura, Kyoichi; Kamata, Osamu; Ueki, Showa. Faculty of Pharmaceutical Sciences, Kyushu University, Fukuoka, Japan **Chemical synthesis and analgesic effect of morphine ethereal sulfates.** *Life Sciences*. 11(II):525-533, 1972.

The chemical synthesis of morphine-3-sulfate and morphine-6-ethereal sulfate was achieved utilizing chlorosulfonic acid as the sulfonating reagent. The analgesic effect of the morphine-6-sulfate in mice was on about the same order of magnitude as that of morphine. However, 20mg/kg of morphine-3-sulfate produced no observable analgesic effect. Careful examination using thin-layer chromatography did not reveal morphine-6-sulfate in the urine of cats injected with morphine. It is concluded that the observed analgesic effect of the morphine ethereal sulfates was not attributable to free morphine which might be liberated in vivo from morphine-6-sulfate, but to morphine-6-sulfate itself. 15 references. (Author abstract modified)

**119054** Mahoney, Joan Munroe; Harris, Robert A. Department Biochemistry, Indiana University School of Medicine, Indianapolis, IN 46202 **Effect of delta9-tetrahydrocannabinol on mitochondrial processes.** *Biochemical Pharmacology* (Oxford). 21(9):1217-1226, 1972.

The major psychoactive component of marijuana, delta9-tetrahydrocannabinol (THC), strongly affected rat liver mitochondria in vitro. A concentration of 15 to 60nmol/mg of mitochondrial protein, THC uncoupled state IV respiration and decreased respiratory control and the ADP/O ratios. Energy linked changes in the fluorescence of 8-anilino-1-naphthalene sulfonate were prevented or reversed by THC. The THC also effected large amplitude swelling of the mitochondria and the release of matrix enzymes. These effects were greatly potentiated by magnesium ion. Similarly, the flocculation of mixed phospholipid micelles by magnesium ion was potentiated greatly by low concentrations of THC. Studies using micelles prepared from purified phospholipids suggest that THC may specifically destabilize the cardiolipin in mixed micelles. 16 references. (Author abstract modified)

**119055** Karobath, Manfred. Psychiatrische Universitätsklinik, Afl092, Vienna, Austria. Serotonin synthesis with rat brain synaptosomes: effects of serotonin and monoamine oxidase inhibitors. *Biochemical Pharmacology* (Oxford). 21(9):1253-1263, 1972.

Synthesis of serotonin from tryptophan was measured in synaptosomes isolated from rat brainstem and diencephalon. Incubation with exogenous serotonin adds only to small decreases in the rate of serotonin synthesis. Of several monoamine oxidase inhibitors examined only pheniprazine appeared to inhibit serotonin synthesis. This effect of pheniprazine was probably not mediated by monoamine oxidase inhibition and secondary feedback inhibition by elevated levels of endproduct. It is suggested that pheniprazine can inhibit the formation of both serotonin and catecholamines at the aromatic amino acid decarboxylase step. 26 references. (Author abstract)

**119056** Peterson, N.A.; McKean, C.M.; Raghupathy, E. Brain-Behavior Research Center, Sonoma State Hospital, Eldridge, CA 95431. Effects of phenothiazines on amino acid transport and protein synthesis in isolated nerve endings. *Biochemical Pharmacology* (Oxford). 21(9):1275-1287, 1972.

The uptake of C14-labeled leucine, phenylalanine, aspartic acid, and proline by isolated synaptosomal particles from the brain cortices of young adult rats was strongly inhibited by low concentrations of promazine and chlorpromazine. Chlorpromazine was consistently the more inhibitory of the two drugs. The inhibition of leucine uptake by the phenothiazines was of the competitive type. Hill plots of the inhibition of leucine and phenylalanine uptake suggest that the inhibition occurs in a single rate limiting step. Analysis of the inhibition of proline and aspartic acid by chlorpromazine and promazine suggest a basic difference in the modes of action of these two compounds. The incorporation of (C14)leucine into protein by intact synaptosomal systems was also inhibited by promazine and chlorpromazine. The inhibition was competitive in nature. Evidence is presented to indicate that the phenothiazines may exert independent inhibitory effects on synaptosomal amino acid transport and on amino acid incorporation into protein. 14 references. (Author abstract modified)

**119057** Leonard, B.E. Pharmacology Section, Imperial Chemical Industries Ltd., Pharmaceuticals Division, Alderley Park, Cheshire, England. Effect of four amphetamines on brain biogenic amines and their metabolites. *Biochemical Pharmacology* (Oxford). 21(9):1289-1297, 1972.

The effect of D-amphetamine, D-methylamphetamine, p-nitromethylamphetamine and p-bromomethylamphetamine on the release and turnover of brain noradrenaline and 5-hydroxytryptamine (5-HT) have been studied in the rat. All the amphetamines increased the turnover of brain 5-HT but their mechanism of action in reducing the level of this amine appeared to differ. Thus methylamphetamine and p-nitromethylamphetamine potentiated the effect of 4-methyl-alpha-ethyl-meta-tyramine in depleting brain 5-HT, whereas the other two amphetamines were without effect. Similarly both methylamphetamine and p-nitromethylamphetamine significantly decreased the turnover of brain noradrenaline whereas the other amphetamines were without effect. The effect of these drugs on the noradrenaline, dopamine, 5-HT, normetanephrine, and 5-hydroxyindole acetic acid concentration in the cortex, middle brain, and caudal brain regions were also studied. para-Bromomethylamphetamine appeared to be unique in that it only affected the normetanephrine and 5-hydroxyindole acetic acid content of the middle brain region. The other amphetamines affected the metabolism of the biogenic amines in at least two of the three brain regions studied. All the drugs produced behavioral stimulation, salivation, and hyperthermia. The severity of these effects depended on the dose and nature of the drug used. D-Amphetamine and methylamphetamine caused maximal sympathomimetic effects in relatively low doses, whereas dopamine and p-bromomethylamphetamine caused slight behavioral excitation only in high doses. 27 references. (Author abstract modified)

**119161** Ito, Akira; Schanberg, Saul M. Dept. of Pharmacology, Duke Univ. Medical Center, Durham, N. C. 27710. Central nervous system mechanisms responsible for blood pressure elevation induced by p-chlorophenylalanine. *Journal of Pharmacology and Experimental Therapeutics*. 181(1):65-74, 1972.

The influence of alterations in brain serotonin on central blood pressure control in rats was in-



vestigated. An elevation in blood pressure was produced in rats after either intracisternal or i.p. injections of p-chlorophenylalanine. The elevation was dose related. Pulse and respiration rates showed no significant changes. The pressor response was preceded by selective depletion of serotonin in the brain and was blocked by simultaneous or subsequent treatment with 5-hydroxytryptophan. Data from these and from experiments in which the brain stem was transected sequentially suggest that the pressor response to p-chlorophenylalanine is mediated by depletion of serotonin in the brain stem and that serotonergic structures in the rostral medulla may exert an important role in central tonic regulation of systemic blood pressure in rats. 18 references. (Author abstract modified)

**119162** Gruener, Raphael; Narahashi, Toshio. Dept. of Physiology, Univ. of Arizona, College of Medicine, Tucson, Ariz. 85724 The mechanism of excitability blockade by chlorpromazine. *Journal of Pharmacology and Experimental Therapeutics*. 181(1):161-170, 1972.

The mechanism of action of chlorpromazine in blocking neuronal excitability was investigated with the internally perfused preparation of the squid giant axon. The results indicate the following: excitability blockade is achieved without affecting the membrane potential, and blockage therefore occurs by abolishing the action potential mechanism directly. Voltage clamp experiments revealed that this block is achieved by the inhibition of the mechanism of the transient sodium conductance and that of the steady state potassium conductance after external drug application, whereas internal chlorpromazine perfusion inhibits primarily the transient sodium conductance. Application of chlorpromazine in either the external or the internal phase of the perfused axon, at low pH, showed that blockage occurs from either side of the membrane. Raising the pH in either external or internal phase results in apparent block removal which may however be reinstalled without further drug addition by reducing the pH. This finding indicates a virtual irreversible binding of chlorpromazine to the membrane receptor. The binding is pH independent but the blockade is favored when the drug exists primarily in its cationic form. 17 references. (Author abstract)

**119301** Schubert, Johan; Sedvall, Goran. Dept. of Psychiatry, Karolinska Institutet, Stockholm,

Sweden Effect of amphetamines on tryptophan concentrations in mice and rats. *Journal of Pharmacy and Pharmacology* (London). 24(1):53-62, 1972.

(d,l)-Amphetamine and some of its analogues were administered intraperitoneally to mice and rats and the concentrations of tryptophan in tissues were analyzed by fluorimetric and microbiologic techniques. The concentration of tryptophan in brain was markedly increased by (d,l)-amphetamine and reached a maximum about 80 min after drug administration. The effect was dose dependent with a threshold dose below 1mg/kg. (d)-Amphetamine was significantly more potent than p-chloroamphetamine and p-hydroxyamphetamine, indicating that the changes in tryptophan concentrations might be related to the central stimulating effect of the drugs. (d,l)-Amphetamine delayed the disappearance from brain of intravenously administered (3H)tryptophan. Inhibition of monoamine oxidase by nialamide (100mg/kg) and tryptophan hydroxylase by H 22/54 (500 mg/kg) had no effect on the tryptophan concentration in brain. 30 references. (Author abstract)

**119302** Marcucci, F.; Mussini, E.; Airoidi, L.; Guaitani, A.; Garattini, S. Istituto di Ricerche, Farmacologiche 'Mario Negri', Via Eritrea, 62, 20157 Milan, Italy Brain concentrations of lorazepam and oxazepam at equal degree of anticonvulsant activity. *Journal of Pharmacy and Pharmacology* (London). 24(1):63-64, 1972.

A study to compare the effective brain concentrations of oxazepam and lorazepam on leptazol induced convulsions was made. Both drugs were administered intravenously to mice. Depending on the time of administration, the antileptazol activity of lorazepam is from 3 to 12 times higher than that of oxazepam. The brain concentrations necessary to obtain a comparable degree of this activity are, however, 3 to 4 times lower for lorazepam than for oxazepam. Lorazepam is more potent than oxazepam in terms of dose but also in brain concentrations required for exerting an anticonvulsant action. 8 references.

**119303** Contreras, E.; Castillo, S.; Quijada, L. Dept. of Pharmacology, Univ. of Concepcion, Cassilla 74-C, Concepcion, Chile Effect of drugs that modify 3',5'-AMP concentrations on morphine analgesia. *Journal of Pharmacy and Pharmacology* (London). 24(1):65-66, 1972.

The interactions of morphine with a number of drugs that affect the cyclic adenylate concentrations were examined. Female albino mice were treated with: morphine, theophylline, imidazole, sodium fluoride, and propranolol. No evidence was found to favor the assumption that morphine analgesia is mediated by an increase in 3',5'-AMP concentrations since no significant results were observed after theophylline or sodium fluoride administration, whereas imidazole, which decreases the adenylate concentrations, exhibited a synergistic action with morphine. However there may be a possible relation of morphine analgesia with cyclic AMP since the drugs used in conjunction with morphine have many other effects that may induce concomitant changes in animal reactions. 16 references.

**119304** Baldessarini, Ross J. Psychiatric Research Laboratories, Dept. of Psychiatry, Massachusetts General Hospital, Boston, Mass. **Inhibition of catechol-O-methyl transferase by L-dopa and decarboxylase inhibitors.** *Journal of Pharmacy and Pharmacology* (London). 24(1):78-80, 1972.

The inhibition of catechol-O-methyl transferase (COMT) by L-dopa and decarboxylase inhibitors was examined. Compounds were tested for their ability to prevent the formation of (3H)-normetanephrine from the catechol substrate, (1(7)-3H)noradrenaline in the presence of crude extracts of tissue. The compound N1-(DL-seryl)-N2-(2,3,4-trihydroxybenzyl) hydrazine was a very active inhibitor of COMT, and very nearly as potent as the well known inhibitor, pyrogallol (Sigma), of which it is a structural analogue. The catechol compounds, L-dopa and L-alpha-methyl-dopa-alpha-hydrazine, were much weaker inhibitors. Similar results were obtained with preparations of COMT from rat brain. In contrast, L-alpha-methyl-dopa and L-3-O-methyl-dopa were very weak inhibitors and DL-alpha-methyl tyrosine (Sigma) and ascorbic acid (Fisher) were even less effective. 8 references.

**119305** Ho, Beng T.; Taylor, Dorothy; Askew, William E.; Kimball, A. P. Texas Research Institute of Mental Sciences, Houston, Tex. 77025 **Effect of reserpine on the transport of 5-hydroxytryptamine to the rat brain.** *Journal of Pharmacy and Pharmacology* (London). 24(1):80-81, 1972.

The effect of reserpine on the transport of 5-hydroxytryptamine (5-HT) to the rat brain was examined. Reserpine neither depleted nor inhibited the uptake of endogenous 5-HT in blood platelets.

It exerted no effect on the concentration of endogenous 5-HT in the rat brain. After administration of 10mg/kg of 5-HT, the absolute platelet content of 5-HT was significantly lower in reserpinized animals than in animals receiving no reserpine, indicating a blockade of 5-HT uptake in the platelets by the reserpine. This blockade, however, was not complete since the value obtained in reserpinized animals injected with exogenous 5-HT was much higher than that of the controls receiving reserpine only. In animals injected only with 5-HT, the brain 5-HT content was significantly increased above the control values (Table 1). These results substantiated the findings. When the same dose of 5-HT was given to reserpinized animals, the increase in brain 5-HT was even more pronounced. From the data it appears that reserpine pretreatment significantly inhibits the platelet uptake of injected 5-HT, and thus increases the amount of 5-HT available for passage to the brain. 9 references.

**119306** Fuller, Ray W. Lilly Research Laboratories, Eli Lilly and Co., Indianapolis, Ind. **Species difference in the lowering of brain 5-hydroxytryptamine by m-chloroamphetamine.** *Journal of Pharmacy and Pharmacology* (London). 24(1):88, 1972.

Differences in the lowering of brain 5-hydroxytryptamine by m-chloroamphetamine (m-ch) in the rat brain and in the guinea pig was examined. In rats, there was a reduction in brain 5-HT 6 hr after m-ch was administered. The effect of p-chloroamphetamine (p-ch) was greater than that of m-ch. On the contrary, there was no difference in guinea pigs between the effects of m-ch and p-ch. The p-ch compound lowered 5-HT in guinea pigs to an identical extent as in rats, whereas the m-chloro compound lowered 5-HT significantly more in guinea pigs than in rats. Results show that m-ch has the potential of lowering brain 5-HT in the same manner as does p-ch; that potential is realized in the guinea pig, a species that does not inactivate the m-chloro compound by p-hydroxylation. 4 references.

**119391** Henriksen, Steven; Dement, William. Stanford University School of Medicine, Stanford, CA **Further studies in cats chronically treated with p-chlorophenylalanine (PCPA).** *Psychophysiology*. 9(1):126, 1972.

In a paper presented to the 11th Annual Meeting of the Association for the Psychophysiological Study of Sleep pontine stimulation was used as a



means of assessing change in ponto - geniculate - occipital (PGO) activity during chronic administration of p-chlorophenylalanine (PCPA). During such treatment, changes occur in the rate, distribution and amplitude of PGO spikes. The initial effect of PCPA is a facilitation of PGO bursting, and a decrease in mean amplitude. After three to four days of PCPA administration PGO spikes appeared in the waking state. This emergence is associated with decreased spike rate in REM periods. Associated with the waking PGO spikes are pseudohallucinatory episodes. Pontine stimulation at this time will evoke waking PGO spikes with identical waveform and interval characteristics as PCPA induced waking spikes. Both are identical to REM PGO spikes. Evoked waking PGO activity can also be associated with pseudohallucinatory episodes. (Journal abstract modified)

**119392** Jones, Barbara E. University of Delaware, Newark, DE Hypothetical role of deaminated metabolites of noradrenaline in PGO spiking and PS. *Psychophysiology*. 9(1):126-127, 1972.

In a paper presented to the 11th Annual Meeting of the Association for the Psychophysiological Study of Sleep, the possible involvement of the metabolites of noradrenaline (NA) in the generation of ponto - geniculate - occipital (PGO) spiking and paradoxical sleep (PS) was investigated. Drugs which inhibited the respective metabolic routes of NA were administered intraperitoneally to seven chronically implanted cats (EOG, EMG, EEG and LG) which were recorded two days prior to and two to six days following drug administration. The following results were obtained: (1) 100mg/kg tropolone (an inhibitor of catechol-O-methyl transferase, COMT) produced a slight increase of PGO spiking in stage two sleep. A dose of 50mg/kg tropolone in combination with 25mg/kg L-Dopa (the CA precursor) produced a release of PGO spiking in stages one and two sleep, a latent increase in frequency of spiking during PS and in amount of PS. (2) 5mg/kg desipramine (an inhibitor of NA uptake) produced a decrease in amount of spiking in stages one and two sleep, in frequency of spikings and PS and in amount of PS. (3) 8mg/kg tranlylcypromine, 10mg/kg pheniprazine and 100mg/kg pargyline (inhibitors of monoamine oxidase, MAO) produced a total suppression of spiking for one, two and three days respectively, and of PS for

one, three and four days, respectively. A dose of 2.5mg/kg pheniprazine plus 25mg/kg L-Dopa and 50mg/kg pargyline plus 25mg/kg L-Dopa produced similar decreases in amount and frequency of spiking as well as suppression of PS, although for shorter periods. In the interpretation of these results, it appears that the simple elevation, which would be produced by each inhibitor of NA, is not associated with an increase of PGO spiking or PS. However, the amount of spiking and PS appears to be correlated with the amount of deaminated metabolites of NA, whereby inhibition of COMT increases, inhibition of reuptake decreases and inhibition of MAO suppress both variables. (Journal abstract modified)

**119534** Rechtschaffen, Allen; Michel, Francois; Metz, John T. University of Chicago, Chicago, Illinois Relationship between extraocular and PGO activity in the cat. *Psychophysiology*. 9(1):128, 1972.

In a paper presented to the 11th Annual Meeting of the Association for the Psychophysiological Study of Sleep it is reported that the PGO eye muscle spike complex, investigated in 10 cats, is initiated by a decrease of tonic EMG in one lateral rectus and the contralateral medial rectus (arbitrarily designated LR01 and MR-2), and by a pontine potential. From 10 to 20 msec later, a primary EMG spike appears in LR-2 and MR-1, the pontine potential reverses polarity and the LGB spike begins. Eye movements may or may not appear. When spiking becomes dense, secondary spikes may appear in LR-1 and MR-2 from 25 to 100 msec after initiation of the complex; when latencies are relatively long, there are secondary LGB spikes as well. Whereas eye movements in a burst may appear disorganized, the EMG spike complex tends to repeat stereotypically within the burst. During waking eye movements, latencies between decline of tonic EMG in one rectus and the spike in the contralateral rectus average about 5msec if the head is held still, but may be over 15 msec during head movements. Under P-chlorophenylalanine and reserpine, even with head still, the latencies approximate the 10 to 20 msec of REM sleep. During slow sleep there are more LGB than EMG spikes. During REM, the relationship is very close, although in late REM, there are frequently more EMG than LGB spikes. (Journal abstract modified)

**119683** Jones, Barbara E. Groupe de Neuropharmacologie Biochimique, College de France, Paris 5, France The respective involvement of noradrenaline and its deaminated metabolites in waking and paradoxical sleep: a neuropharmacological model. *Brain Research* (Amsterdam). 39(1):121-136, 1972.

To assess the role of noradrenaline (NA) and its metabolites in waking, ponto - geniculo - occipital (PGO) spiking and paradoxical sleep (PS) drugs which selectively inhibit 1 of the 3 metabolic pathways of NA were administered to chronically implanted cats. Drugs included: L-dopa; tropolone; desipramine; pargyline; tranylcypromine; and pheniprazine. Whereas drug induced increases in NA levels generally produced an enhancement and increase in duration of waking, this same increase was not associated with an increase in spiking or PS. These phenomena are correlated however with the presumed level of deaminated metabolites of NA, where inhibition of catechol-O-methyl transferase leads to an increase, inhibition of reuptake leads to a decrease and inhibition of monoamine oxidase leads to a disappearance of these metabolites, and of PGO spiking and PS. It was hypothesized that NA is implicated in the mediation of waking and that its deaminated metabolites are implicated in the generation of PGO spiking and PS. 26 references. (Author abstract modified)

**119684** Pujol, Jean-Francois; Sordet, Francoise; Petitjean, Francoise; Germain, Danielle; Juvet, Michel. Laboratoire de medecine Experimentale, Faculte de Medecine, Lyon France /Insomnia and cerebral metabolism of serotonin in cat: in vitro synthesis and release of serotonin 18 h after destruction of the raphe nuclei./ *Insomnie et metabolisme cerebral de la serotonine chez le chat: etude de la synthese et de la liberation de la serotonine mesurees in vitro 18 h apres destruction du systeme du raphe*. *Brain Research* (Amsterdam). 39(1):137-149, 1972.

The central metabolism of serotonin (5-HT) during insomnia in cats was examined. The experiment was performed upon cats chronically implanted and continuously recorded. After 18 h of continuous insomnia following the destruction of the raphe system a global estimation of the in vitro synthesis and inactivation of 3H-5-HT from 3H-Trp was performed in different parts of the brain. Tryptophan hydroxylase activity was also measured in the mesencephalon and in the

thalamus. Spontaneous in vitro release of 3H-5-HT was assayed by measuring the 3H-5-HT in the incubating medium. Our results show that a decrease of synthesis and inactivation can be observed at the level of the serotonergic terminals during the first hours following the destruction of the cell bodies. Moreover, a 60% decrease of the spontaneous in vitro release of 3H-5-HT was observed in the mesencephalon and thalamus. This fact suggests that this in vitro release could represent a biochemical component of the physiological in vivo release of 5-HT. 33 references. (Author abstract modified)

**119830** Stern, Warren C.; Hartmann, Ernest L. Boston State Hospital, Boston, Mass. Effects of dextro-amphetamine following desynchronized sleep deprivation in rats. *Psychophysiology*. 9(1):145, 1972.

In a paper presented to the 11th Annual Meeting of the Association for the Psychophysiological Study of Sleep it was found that the increase of general activity levels after 2mg/kg of d-amphetamine sulfate, interperitoneally, was significantly greater in normal rats (540% of nondrug activity) and in cold water immersed stress controls (475%) than in rats which were desynchronized sleep (D) deprived for 4 days (172%). In a second experiment the lethality of d-amphetamine (110mg/kg) following 3 to 4 days of D deprivation or water stress was found to be significantly greater than in the home cage control group. This suggests that chronic stress (D deprivation or water immersion) reduces amphetamine lethality, an outcome opposite to that reported when a novel stress is given during the postamphetamine period. In summary, D deprivation, but not water stress, reduces the stimulant action of a low dose of amphetamine. Both D deprivation and water stress groups show enhanced survival following a high dose of amphetamine. (Journal abstract modified)

**119832** Hartmann, Ernest L.; Stern, Warren C. Boston State Hospital, Boston, Mass. Active avoidance conditioning: effects of D-deprivation (desynchronized sleep deprivation) and of altered brain catecholamines. *Psychophysiology*. 9(1):146, 1972.

In a paper presented to the 11th Annual Meeting of the Association for the Psychophysiological Study of Sleep the interaction between brain catecholamines (CA) and the behavioral effects of

desynchronized sleep deprivation (D-dep) were examined. After 4 days of D-dep rats required significantly more training trials to learn a one way active avoidance task than normals or cold water immersed stress controls. An attempt was made to reverse this avoidance acquisition deficit in the D-dep rats by administering L-Dopa following D-dep but prior to behavioral training. L-Dopa 200mg/kg given to normal subjects induced a considerable acquisition impairment. The same dose of L-Dopa given to D-dep animals, however, produced approximately normal performance, L-Dopa significantly impaired acquisition when given alone but almost restored to normal the poor performance of D-dep rats. A dose of dl-alphamethylparatyrosine, an inhibitor of CA synthesis, given to normals produced an avoidance acquisition deficit and L-Dopa significantly counteracted this effect. This latter effect of L-Dopa increases the probability that the improved avoidance acquisition observed in D-dep rats given L-Dopa is related to enhanced CA. These data are consistent with the hypothesis that D-dep impairs the functioning of central CA dependent systems. (Journal abstract modified)

**119983 Andreoli, V. M.; Villani, F.; Brambilla, G.** Department of Pharmacology, University of Milan, Via A. Del Sarto, 21, I-20129, Milan, Italy **Increased calcium and magnesium excretion induced by lithium carbonate.** *Psychopharmacologia* (Berlin). 25(1):77-85, 1972.

Sodium, calcium, potassium, and magnesium ion concentrations in urine and serum were determined in male rats treated for 14 days with lithium carbonate at doses of 7.5 and 15mg/100g body weight, while each animal was kept in a metabolism cage. In spite of polyuria and polydipsia, no variations in sodium and potassium urinary excretion and serum concentrations were found, while a statistically significant increase in calcium and magnesium serum concentration and renal excretion were detected. These variations were dose dependent. Calcium seemed the most sensitive to lithium activity and magnesium urinary excretion showed a significant increase only in the 15mg/100g body weight treated rats. Creatinine excretion, pH, lithium concentrations in urine and serum were measured, and histological and electron microscopic examination of the kidney made. The possible activity of lithium on the system controlling the physiological balance of calcium and magnesium is discussed. 28 references. (Author abstract)

**119985 Sjostrom, Rolf.** Psychiatric Research Center, Ulleraker Hospital, University of Uppsala, Uppsala, Sweden **Steady-state levels of probenecid and their relation to acid monoamine metabolites in human cerebrospinal fluid.** *Psychopharmacologia* (Berlin). 25(1):96-100, 1972.

There are marked interindividual differences in the concentration of probenecid in plasma and cerebrospinal fluid after a standard dose. There is a significant correlation between the concentration of probenecid and the concentrations of 5-hydroxyindoleacetic acid and homovanillic acid in cerebrospinal fluid. Plasma or cerebrospinal levels of probenecid should be taken into account when the turnover rate of monoamines is measured in this way. 11 references. (Author abstract modified)

**120011 Greenwood, D. T.; Sommerville, A. R.** ICI Limited, Pharmaceuticals Div., Mereside, Alderley Park, Macclesfield, Cheshire SK10 4TG, England **The effect of immunosympathectomy on the responses of the mouse to reserpine and various antidepressant and stimulant drugs.** *Psychopharmacologia* (Berlin). 24(2):231-237, 1972.

The technique of immunosympathectomy was used to investigate the relative importance of sympathetically mediated processes in the body temperature responses of mice to reserpine treatment and the thermogenic effects of subsequently administered antidepressant and central nervous system stimulant drugs. It was found that immunosympathectomized mice were less sensitive to the temperature lowering effects of reserpine but exhibited, unexpectedly, an enhanced thermogenic response to each of the representative antidepressant and stimulant drugs tested. These findings appear to exclude the sympathetic division of the autonomic nervous system as an essential prerequisite for the thermogenic effects of antidepressant and stimulant drugs in reserpine treated mice. It is suggested that the observed effects could be accounted for in terms of a possible hyperfunctional adrenal gland. 6 references. (Author abstract)

**120012 Vogel, W. H.; Carapellotti, R. A.; Evans, B. D.; Der Marderosian, A.** Dept. of Pharmacology, Thomas Jefferson Univ., 1020 Locust St., Philadelphia, Pa. 19107 **Physiological disposition of isoergine (from *Argyrea nervosa* (Burm. f.) Bojer convolvulaceae) and its effect on the conditioned avoidance response in rats.** *Psychopharmacologia* (Berlin). 24(2):238-242, 1972.



Physiological disposition of isoergine (d-isolysergamide, iso-LA) obtained from the seeds of *Argyrea nervosa* (Burm. f.) Bojer were determined in rat liver, brain and plasma. Method of determination involved the extraction of the drug from biological samples and quantitation of the compound by fluorometric analysis. The injection of 5mg/kg, i.p., of iso-LA resulted after 5 min in peak levels in the liver and after 15 min in peak levels in the brain and plasma. After 120 min, 90% of the compound had disappeared from the tissues and plasma. The minimal dose required to produce a significant decrease in the conditioned avoidance response (CAR) was somewhat less than 5mg/kg. The minimal brain level which interfered with the CAR was approximately 1 microgram per gram. Brain levels of iso-LA seem to correlate directly with changes in behavior suggesting that iso-LA, and not a metabolite, is the psychoactive agent. 12 references. (Author abstract)

**120218** Shaywitz, Bennett; Gormley, William T.; Arnold, Eugene A.; Back, Kenneth C. Aerospace Medical Research Laboratory (THT), Wright-Patterson AFB, Dayton, Ohio 45433 The ontogeny of 14C-dopamine clearance from the cerebral ventricles of developing rhesus monkeys. *Life Sciences*. 11(4):181-188, 1972.

Efflux of 14C-dopamine was determined in developing rhesus monkeys using ventriculocisternal perfusion. Clearance of 14C-dopamine was significantly greater in the youngest group of monkeys although no differences were found in inulin clearance, CSF formation or brain weight. This may indicate immaturity of the blood - brain barrier or reflect immaturity of mechanisms responsible for intracellular uptake and storage of dopamine. 16 references. (Author abstract)

**120228** Friedman, Eitan; Gershon, Samuel. Neuropsychopharmacology Research Unit, Dept. of Psychiatry, New York Univ. Medical School, New York, NY L-Dopa and imipramine: biochemical and behavioral interaction. *European Journal of Pharmacology* (Amsterdam). 18(2):183-188, 1972.

The effects of L-dopa and its interaction with imipramine and chlorimipramine on rat behavior and brain amine levels were studied. Imipramine, a tricyclic antidepressant, potentiated motor activity induced by L-dopa in combination with an aromatic decarboxylase inhibitor. Stereotype behavior induced by L-dopa was not affected by

imipramine. The order of administration of imipramine did not alter the responses to L-dopa was not affected by imipramine. The order of administration of imipramine did not alter the response to L-dopa. Imipramine and chlorimipramine pretreatment obviated the L-dopa elicited serotonin depletion. Posttreatment with the tricyclic drugs did not protect the L-dopa induced serotonin reduction. This protection of brain serotonin was not due to the inhibition of L-dopa uptake. Brain catecholamine levels were not significantly altered by either pretreatment or posttreatment with the tricyclic antidepressants. The possibility that L-dopa produces behavioral effects that are mediated through catecholamines and serotonin is discussed. Pretreatment with the tricyclic drugs may be a tool, useful in eliminating serotonin mediated L-dopa effects. 33 references. (Author abstract)

**120230** Ho, A. K. S.; Gershon, S. Neuropsychopharmacology Research Unit, Dept. of Psychiatry, New York Univ. Medical Center, New York, NY 10016 Drug-induced alterations in the activity of rat brain cholinergic enzymes: I. In vitro and in vivo effect of amphetamine. *European Journal of Pharmacology* (Amsterdam). 18(2):195-200, 1972.

The effect of acute and chronic administration of d-amphetamine sulphate on rat brain acetylcholinesterase (AChE) and choline acetylase (ChAc) activities has been studied. High concentrations of amphetamine were found to activate both AChE and ChAc activities in crude extracts from rat brain. Daily amphetamine injections into rats produced after some time an increase in ChAc activity of the brain but had no significant effect on its AChE activity. There was a marked inhibition in eating behavior (95%) following the first day of treatment. Eating behavior increased to about 40% of the control level after 14 days of treatment. There was a gradual reduction in body weight. The progressive changes in drug induced eating behavior and body weight showed some correlation to changes in ChAc activity. The possibility of amphetamine induced adrenergic activity interacting with cholinergic function is discussed. 35 references (Author abstract)

**120231** Butcher, Larry L.; Rhodes, Dell L.; Yuwiler, Arthur. Dept. of Psychology, Univ. of California, Los Angeles, CA 90024 Behavioral and biochemical effects of preferentially protecting

monoamines in the brain against the action of reserpine. *European Journal of Pharmacology* (Amsterdam). 18(2):204-212, 1972.

The relative importance of brain monoamines for behavior maintained by a fixed ratio 30 schedule of food reinforcement was evaluated using drug regimens designed to preferentially prevent reserpine induced depletion of catecholamines, of 5-hydroxytryptamine (5-HT), or of all three monoamines. In all regimens the animals were studied 24 hr after reserpine. A severe depression of lever pressing was observed in mice in which monoamines were depleted by 2.5mg/kg reserpine alone and those in which catecholamine content was reduced but 5 HT maintained - at control levels by injections of 200-400mg/kg DL-5-hydroxytryptophan before and after reserpine treatment. Injections of 300-400mg/kg L-dopa prior to and after reserpine prevented depletion of catecholamines whereas central 5-HT content dropped to 62% control. Following this regimen, mice showed a slight but significant decrease in lever pressing rate. Preserpine administration of 200mg/kg tetrabenazine maintained dopamine and 5-HT levels at 76 to 77% with norepinephrine dropping to 56% control. Despite this partial depletion of monoamine stores, tetrabenazine protected mice displayed no change in their postinjection lever pressing performance. It is concluded that catecholamines are necessary for conditioned lever pressing but that 5-HT may play a contributory role. Further, the ratio of brain monoamine levels may be an important correlate of fixed ratio performance. 15 references. (Author abstract)

**120232** Consolo, S.; Ladinsky, H.; Peri, G.; Garattini, S. Istituto di Recherche Farmacologiche 'Mario Negri', Via Eritrea, 62, 20157 Milan, Italy **Effect of central stimulants and depressants on mouse brain acetylcholine and choline levels.** *European Journal of Pharmacology* (Amsterdam). 18(2):251-255, 1972.

Brain concentrations of acetylcholine and choline were measured within 5 to 30 min after an i.p. injection of central stimulant or depressant drugs. The acetylcholine concentration in whole mouse brain of controls was 2.35 micrograms/gram wet wt. while the choline concentration was 6.52 microgram/g wet wt. Physostigmine, 0.5mg/kg, oxotremorine, 2mg/kg free base, and haloperidol, 4 and 8mg/kg, increased both acetylcholine and choline 20 min after administra-

tion. Pentobarbital, 55mg/kg, and diazepam, 5 to 40mg/kg, increased only acetylcholine without affecting choline. Atropine, 50mg/kg lowered acetylcholine imipramine, 20mg/kg, and amphetamine, 7 and 15mg/kg, had no effect on either acetylcholine or choline. No drug studied caused a simultaneous decrease in these 2 quaternary amines. The possible significance of these findings on the mechanism of action of these drugs is discussed. 19 references. (Author abstract)

**120233** Mapfumo Chinyanga, H.; Vartanian, G. A.; Okai, E. A.; Greenberger, D. V. Dept. of Physiology, Univ. of Ghana Medical School, P.O. Box 4236, Accra, Ghana **Chloroquine-induced depression of neuromuscular transmission.** *European Journal of Pharmacology* (Amsterdam). 18(2):256-260, 1972.

The action of chloroquine on neuromuscular transmission in the frog was studied. It was found that chloroquine depressed and finally blocked neuromuscular transmission. It also depressed the action potential in the axons without changing their membrane potential. Most probably the drug blocks transmission by depressing the sodium conductance mechanism in axon terminals. 12 references. (Author abstract)

**120234** Kaul, C. L.; Grewal, R. S. CIBA Research Centre, Goregaon, Bombay-63, India **Physostigmine- and 1,1-dimethyl-4-phenylpiperazinium-induced pressor responses and catecholamine release in 6-hydroxydopamine-treated rats.** *European Journal of Pharmacology* (Amsterdam). 18(2):261-265, 1972.

In urethane anesthetized rats, physostigmine and 1,1-dimethyl-4-phenylpiperazinium (DMPP) markedly increased the adrenal catecholamine output in normal and in 6-hydroxydopamine treated rats. Pretreatment with 6-hydroxydopamine did not interfere with the release of catecholamines following physostigmine and DMPP whereas the blood pressure responses were substantially blocked. A similar block in the pressor response was seen in animals in which demedullation had been performed prior to giving 6-hydroxydopamine. 6-Hydroxydopamine pretreatment enhanced the pressor effect of noradrenaline. It is concluded that increases in the catecholamine output do not contribute to the pressor effects either DMPP or physostigmine. 14 references. (Author abstract)

**120235** Oppermann, J. A.; Ryan, C. F.; Haavik, C. O. G. D. Searle and Co., Chicago, IL The role of metabolism in temperature-dependent supersensitivity of guinea-pig atria to sympathomimetic amines. *European Journal of Pharmacology* (Amsterdam). 18(2):266-270, 1972.

The role of enzymatic metabolism in the temperature dependent supersensitivity to noradrenaline has been investigated at 37 deg C and at 26 deg C in isolated guinea pig atria and in homogenates of guinea pig atria. In vitro monoamine oxidase (MAO) activity was found to be decreased at 26 deg C as compared to 37 deg C. However, 17-22 hr after pretreatment of guinea pigs with pargyline, the degree of temperature induced supersensitivity in isolated atria was unaltered although in vitro MAO activity was 93% inhibited at both incubation temperatures. The temperature dependent supersensitivity of isolated atria to alpha-methylnoradrenaline, a sympathomimetic amine not metabolized by MAO, was greater than that found for noradrenaline. In vitro catechol-O-methyl transferase (COMT) activity also was greater at 37 deg C than at 26 deg C. In isolated atria, a concentration of 3,4-dimethoxy-5-hydroxybenzoic acid which produced 33% inhibition of COMT activity in vitro, did not abolish the temperature dependent supersensitivity to noradrenaline. However, sensitivity of isolated atria to nylidsin, a sympathomimetic amine not metabolized by COMT, is identical at the two bath temperatures. The data suggest that temperature-dependent supersensitivity of isolated guinea pig atria to sympathomimetic amines may be due to decreased COMT activity at the lower bath temperature. 6 references. (Author abstract)

**120236** Coates, G. H.; Cox, B. Dept. of Pharmacology, Manchester Univ., Manchester, M13 9PL, England Harmine tremor after brain monoamine oxidase inhibition in the mouse. *European Journal of Pharmacology* (Amsterdam). 18(2):284-286, 1972.

Harmine tremor after brain monoamine oxidase inhibition was studied in the mouse. The TD50 for harmine in mebanazine pretreated mice was not significantly different from that in untreated mice. Mebanazine (20mg/kg s.c.) gave a 99% inhibition of brain monoamine oxidase without tremor. Thus harmine tremor is not related to its effect on brain monoamine oxidase. 9 references. (Author abstract modified)

**120357** Horn, Alan S.; Snyder, Solomon H. Dept. of Pharmacology, Johns Hopkins Univ. School of Medicine, Baltimore, MD 21205 Steric requirements for catecholamine uptake by rat brain synaptosomes: studies with rigid analogs of amphetamine. *Journal of Pharmacology and Experimental Therapeutics*. 180(3):523-530, 1972.

The effects of cis- and trans-2-phenylcyclopropylamine and 1- and 2-aminoindanes, all rigid analogs of amphetamine, were examined for their ability to inhibit catecholamine uptake into synaptosomes from the hypothalamus and corpus striatum. trans-2-Phenylcyclopropylamine (tranylcypromine) was found to be a more potent inhibitor in both brain areas than the cis-isomer. Studies on the separate optical isomers of tranylcypromine showed that the l-isomer was more active than the d-form in both the hypothalamus and corpus striatum. 2-Aminoindane was a better inhibitor than 1-aminoindane in both regions of the brain. The above results suggest that the conformation of amphetamine at the catecholamine uptake site is with the side chain fully extended and the amino group above the plane of the ring, i.e., in an anti conformation. It is also suggested that knowledge of the differential antidepressant efficacy of d- and l-tranylcypromine might indicate the extent to which the drug's antidepressant activity is related to inhibition of monoamine oxidase activity or to impairment of catecholamine reuptake. 25 references. (Author abstract)

**120358** Smith, C. B.; Sheldon, M. I.; Bednarczyk, J. H.; Villarreal, J. E. Dept. of Pharmacology, Univ. of Michigan Medical School, Ann Arbor, MI 48104 Morphine-induced increases in the incorporation of 14C-tyrosine into 14C-dopamine and 14C-norepinephrine in the mouse brain: antagonism by naloxone and tolerance. *Journal of Pharmacology and Experimental Therapeutics*. 180(3):547-557, 1972.

The effects of morphine and levorphanol upon the incorporation of 14C-tyrosine into 14C-catecholamines in various tissues of the mouse were determined. Morphine, 100mg/kg, increased the synthesis of 14C-catecholamines in mouse brain and adrenals but not in heart or spleen. Morphine, 100mg/kg, had no effect upon the free tyrosine or 14C-tyrosine content of the mouse brain. d-Amphetamine, 10mg/kg, did not increase the incorporation of 14C-tyrosine into 14C-catecholamines in these four tissues. Morphine,



100mg/kg, and levorphanol, 10mg/kg, nearly doubled the incorporation of 14C-tyrosine into both 14C-dopamine and 14C-norepinephrine in the brain. Morphine induced increases in 14C-catecholamine synthesis occurred in the cerebral cortex, diencephalon, striatum, brainstem and cerebellum. After repeated administration of either morphine, 100mg/kg, or levorphanol, 30mg/kg, tolerance and cross-tolerance developed to the effects of these drugs upon the synthesis of 14C-dopamine and 14C-norepinephrine. Naloxone, a specific morphine antagonist, blocked the effects of morphine upon 14C-dopamine and 14C-norepinephrine synthesis. The present study suggests that the catecholamines may play an important role in the mechanisms by which narcotic analgesics produce certain specific effects. 21 references. (Author abstract modified)

**120359** Alpers, Hilma S.; Himwich, Harold E. Galesburg State Research Hospital, Galesburg, IL 61401 The effects of chronic imipramine administration on rat brain levels of serotonin, 5-hydroxyindoleacetic acid, norepinephrine and dopamine. *Journal of Pharmacology and Experimental Therapeutics*. 180(3):531-538, 1972.

The effects of chronic imipramine administration on levels of serotonin, 5-hydroxyindoleacetic acid (5-HIAA), norepinephrine and dopamine in six areas of the brain were studied in four groups of female rats: 1) a noninjected, nonhandled group; 2) animals injected i.p. with 0.9% saline for 10 days; 3) animals injected with imipramine HCl for 10 days (20mg/kg i.p. daily); and 4) animals receiving imipramine HCl with food (approximately 20mg/kg daily) for 19 days. Compared to the nontreated group, animals given imipramine HCl either by injection or in food had significantly reduced levels of 5-HIAA in most brain areas. 5-HIAA levels were unchanged in the saline treated group except for the reduced amounts found in the pons - medulla oblongata. The animals fed imipramine had significantly reduced concentrations of serotonin in the hippocampus, mesodiencephalon and pons - medulla. Similar decreases, probably drug related, were also found in the imipramine injected group. However, the extent of the drug induced changes in the latter group was somewhat obscured by the diminution of serotonin in the cortex and medulla by saline injections only. Norepinephrine levels in the three groups of treated animals did not differ significantly from those of the nontreated group.

All three schedules of treatment diminished levels of striatal dopamine. In contrast, imipramine treated animals had significantly increased levels of dopamine in the cerebellum and the pons - medulla oblongata. 30 references. (Author abstract modified)

**120360** Azzaro, A. J.; Wenger, G. R.; Craig, C. R.; Stitzel, R. E. Dept. of Pharmacology, Univ. of Colorado, Denver, CO 80220 Reserpine-induced alterations in brain amines and their relationship to changes in the incidence of minimal electroshock seizures in mice. *Journal of Pharmacology and Experimental Therapeutics*. 180(3):558-568, 1972.

Reserpine induced alterations in brain amines and their relationship to changes in the incidence of minimal electroshock (MES) were studied in mice. Brain amines are intimately involved in the reserpine induced reduction in the threshold for MES in the mouse. This conclusion is supported by the following observations. The administration of amine precursors to reserpine treated animals results in both an increase in brain amines and an antagonism of the effect of reserpine on seizure incidence. Similarly, the administration of inhibitors of catecholamine and/or serotonin synthesis to reserpine treated mice also prevents brain amines from returning toward control levels and prolongs the effect of reserpine on MES. The actions of reserpine can be approximated in control animals by the concomitant inhibition of catecholamine and serotonin synthesis. 30 references. (Author abstract modified)

**120362** Breese, George R.; Moore, Ronald A.; Howard, James L. Dept. of Psychiatry, Child Development Institute, Chapel Hill, NC 27514 Central actions of 6-hydroxydopamine and other phenylethylamine derivatives on body temperature in the rat. *Journal of Pharmacology and Experimental Therapeutics*. 180(3):591-602, 1972.

The central actions of 6-hydroxydopamine (6-OHDA) and other phenylethylamine derivatives was studied for effects on the rat's body temperature. It was noted that: 6OHDA caused body temperature drop at room temperature; 6-OHDA caused greater body temperature drop in cold environment; pargyline pretreatment did not alter room temperature response to 6-OHDA but produced enhancement of the hypothermic response in the cold. With or without pargyline, p-chlorophenylalanine did not alter such hypothermic responses to 6-OHDA. However, the

hypothermic response to acutely administered 6-OHDA in the cold room was absent in animals treated chronically with 6-OHDA. These latter results indicate that the release of endogenous catecholamines are essential for the hypothermia caused by the acute injection of this compound. Preferential reduction of norepinephrine significantly reduced the hypothermia of 6-OHDA but not to the extent observed after the depletion of both catecholamines. Reduction of dopamine did not alter the hypothermic response to 6-OHDA. Several other phenylethylamines, alpha-methylnorepinephrine, alpha-methyloctopamine and metaraminol, were found to produce hypothermia after intracisternal injection. The results with alpha-methylnorepinephrine after central sympathectomy with 6-OHDA were in marked contrast to those results observed after the acute injection of 6-OHDA. Instead of being blocked, the hypothermic response to alpha-methylnorepinephrine was markedly enhanced by central sympathectomy suggesting that at least a part of its activity was related to a direct action of this amine on central receptors which was enhanced by the neuronal destruction caused by 6-OHDA. 33 references. (Author abstract modified)

120364 Craig, Arthur L.; Kufferberg, Harvey J. Dept. of Pharmacology, Univ. of Minnesota, Minneapolis, MN 55455 **Hyperthermia in d-amphetamine toxicity in aggregated mice of different strains.** *Journal of Pharmacology and Experimental Therapeutics.* 180(3):616-624, 1972.

Strain differences in response of aggregated Swiss Webster and BDF1 mice to d-amphetamine were investigated at three environmental temperatures of 19, 23 and 27 deg C. At 19 deg C the Swiss Webster strain of mice exhibited the aggregate toxicity to d-amphetamine whereas the BDF1 strain did not. An increase in ambient room temperature resulted in the appearance of amphetamine aggregate toxicity in the BDF1 strain. The toxicity also increased in the Swiss Webster strain at the higher room temperatures. The strain difference in mortality at 19 deg C was unrelated to brain levels or metabolism of d-amphetamine. Although hyperthermia was noted at all temperatures studied, the BDF1 strain responded to a lesser degree than the Swiss Webster strain. An increase in room temperature resulted in an increase in amphetamine induced hyperthermia. These results indicate that the magnitude of this pharmacogenetic difference is de-

pendent on room temperature, that pharmacokinetic factors are not involved in the difference and that a thermoregulatory difference between the strains is a factor in the strain difference in toxicity. 18 references. (Author abstract)

120524 Baldessarini, R. J.; Vogt, Marcella. Laboratory of Neuropsychopharmacology, Psychiatric Research Laboratories, Massachusetts General Hospital, Boston, Massachusetts **Regional release of aromatic amines from tissues of the rat brain in vitro.** *Journal of Neurochemistry.* 19(3):755-761, 1972.

Radioactive hydroxylated phenylethylamines were released in vitro by electrical stimulation of minces of rat brain tissues from several anatomically discrete areas, while labelled urea and amphetamine were poorly released from all regions. An increase in the release of (3H)norepinephrine occurred in the order hypothalamus, caudate nucleus and cerebral cortex respectively, thus in parallel with the distribution of endogenous norepinephrine. In contrast, (3H)tyramine was poorly released from cortical tissues but readily released from minces of caudate nucleus or hypothalamus. (3H)Octopamine was released from all areas, but was most readily released from the caudate nucleus. Results for cerebral cortex were similar to those for coronal slices or minces of whole brain; the release occurred in the order greatest to least: norepinephrine, octopamine, tyramine in all 3 preparations. Certain beta-hydroxylated phenolic phenylethylamines may be released from norepinephrine or dopamine containing nerve endings in the brain, and that their non-beta-hydroxylated congeners may be released from neurons in which endogenous amines are not beta-hydroxylated. 21 references. (Author abstract modified)

120526 Feighner, J. P.; Lao, L.; King, Lucy J.; Ross, W. J. Department of Psychiatry, University of California, San Diego, CA **Brain serotonin and norepinephrine after convulsions and reserpine.** *Journal of Neurochemistry.* 19(3):905-907, 1972.

Norepinephrine and serotonin were measured in rat brains after serial injections of reserpine and a series of electrically induced convulsions. A series of 12 electrically induced convulsions elevated norepinephrine in pons - medulla over that in untreated controls and also raised norepinephrine in



pons - medulla of reserpine treated rats over that in reserpine only controls. Serotonin was also elevated by convulsions in the pons - medulla of reserpine treated rats over that of reserpine only controls. Serotonin was not elevated by convulsions alone. The only difference in the midbrain - hypothalamus was that norepinephrine was lower after convulsions than in untreated controls. Levels of brain amines in rats given both serial injections of reserpine and a series of electrically induced convulsions vary with the time sequence of administration of reserpine and convulsions. The data is of clinical interest since electrically induced convulsions, useful in the treatment of severely depressed patients, bring about a more rapid recovery of brain amines after their depletion by reserpine, a drug which appears to cause depression in some patients. 10 references.

**120809** Beart, P.M.; Johnston, G.A.R. Department of Physiology, Australian National University, Canberra, Australia **Bicuculline and GABA-metabolizing enzymes.** *Brain Research* (Amsterdam). 38(1):226-227, 1972.

The effect of bicuculline on the activity of some GABA (gamma-aminobutyric acid) metabolizing enzymes was studied in order to investigate GABA - macromolecule interactions. The following four enzymic activities were studied: L-glutamate 1-carboxy-lyase from *Escherichia coli*; and from rat cerebral grey matter; GABA-2-oxoglutarate amino transferase from rat cerebral mitochondria; and from *Pseudomonas fluorescens*. The formation of GABA from L-glutamate by the carboxy-lyases and the coupled formation of succinate from GABA by the transaminases were measured. Bicuculline had no significant effects on the enzymic activities studied. The present study shows that bicuculline induced convulsions are unlikely to be the result of inhibition of this enzymic activity. Bicuculline - GABA antagonism appears to be confined to particular postsynaptic receptors. This selective antagonism may provide useful information regarding molecular aspects of the interaction of GABA with these receptors, and may aid in their isolation and characterization. 10 references.

**120811** Ruby, Thomas A.; Wolf, Harold H. Division of Pharmacology, School of Pharmacy, 425 N. Charter St., University of Wisconsin, Madison, WI 53706 **Effect of intracerebral injections of carbamylcholine and acetylcholine on temperature**

**regulation in the cat.** *Brain Research* (Amsterdam). 38(1):117-130, 1972.

One microliter of carbamylcholine, injected into the diencephalon or mid-brain of unanesthetized, partially restrained cats produced one of 3 effects: (1) a major increase in colonic temperature, usually preceded by a small decrease; (2) a small decrease in colonic temperature followed by an equally small increase; (3) a major decrease in colonic temperature followed by an increase of variable magnitude. Major decreases in temperature were usually accompanied by vasodilation of the ear pinna and reduced EMG activity. Increases in temperature were accompanied by increased EMG activity and often by vasoconstriction (when the latter was measurable due to a prior decrease in vasomotor tone). Type 1 (hyperthermic) effects were elicitable by injections into widespread hypothalamic and 2 upper midbrain loci. Type 3 (hypothermic) responses were obtained by injections only into the rostral hypothalamus and preoptic region. Increasing the dose of carbamylcholine usually augmented the initial hypothermic phase, in some instances to such an extent that type 1 responses were converted to type 3 responses. Conversely, lowering the dose in some cases resulted in attenuation of the hypothermic phase so that hyperthermia became the predominant effect. The effects of acetylcholine (mixed with an equal weight of eserine sulfate) were similar to, but of lesser magnitude and duration, than those elicited by carbamylcholine. 18 references. (Author abstract modified)

**120813** Baumgarten, Hans Georg; Lachenmayer, Lutz. Department of Neuroanatomy, Institute of Anatomy, University of Hamburg, 2 Hamburg 20 Germany **Chemically induced degeneration of indoleamine - containing nerve terminals in rat brain.** *Brain Research* (Amsterdam). 38(1):228-232, 1972.

The neurochemical 5,6-dehydroxytryptamine (5,6-DHT) caused a selective chemical degradation of 5-hydroxytryptamine containing neurons in the rat brain. After a single application of 5,6-DHT, fluorimetric and electron microscopic investigation revealed neurons similar to the stumps of mechanically lesioned serotonin axons. A degeneration of synaptic enlargements of unmyelinated nerve fibers was documented in all brain regions. It is concluded that the application of 5,6-DHT to the brain of experimental animals

enables morphological, physiological and psychological investigations to be made on the anatomy and function of indoleamine neurons in the mammalian brain by a simple and reliable approach. 18 references.

**120831** Kubena, Robert K.; Barry, Herbert, III. Department of Pharmacology, University of Pittsburgh School of Pharmacy, Pittsburgh, PA 15213 **Stimulus characteristics of marihuana components.** *Nature* (London). 235(5338):397-398, 1972.

The pharmacological actions of delta(9)-tetrahydrocannabinol (delta(9)-THC), reported to be the major psychoactive constituent of marihuana, were investigated in rats. The animals were trained to associate the drug and control conditions with opposing approach and avoidance responses. The findings indicate that important characteristics of marihuana can be reproduced by delta(9)-THC. A synergistic action of delta(9)-THC with other compounds, such as the n-propyl analogue of delta(9)-THC, is suggested by reliably greater potency of the alcoholic marihuana extract. Tests were conducted with tranquilizers, central nervous system depressants, psychotomimetics, anticholinergics, other cannabinoids, morphine, and cocaine. In all cases, there was evidence for a dissimilar subjective effect from that of delta(9)-THC. This highly specific response may be a useful device for distinguishing it from other types of drug. 10 references.

**120832** Morgan, Dianna; Lofstrandh, Sonja; Costa, Ermino. Laboratory of Preclinical Pharmacology, National Institute of Mental Health, St. Elizabeths Hospital, Washington, DC 20032 **Amphetamine analogs and brain amines.** *Life Sciences*. 11(2):83-96, 1972.

The interactions of various amphetamine analogs with brain monoamine systems were investigated in male rats, including the effect of these compounds on norepinephrine (NE) and serotonin (5-HT) concentrations in various brain areas, brain tryptophan concentrations, NE and 5-HT uptake systems and monoamine oxidase activity in these areas. The results indicate that the ring substituted p-chloro or m-trifluoromethyl compounds, such as p-chloroamphetamine and norfenfluramine, markedly reduced brain 5-HT concentrations, possibly because of an in vivo inhibition of tryptophan hydroxylase. 33 references. (Journal abstract)

**121063** Thut, Paul D.; Rech, Richard H. Dept. of Pharmacology and Toxicology, Dartmouth Medical School, Hanover, NH 03755 **Effects of L-DOPA on the EEG and brain amines of unrestrained rats.** *Experimental Neurology*. 35(1):13-29, 1972.

Intraperitoneal injection of L-Dopa into chronically prepared rats, did not desynchronize the waking EEG until doses in the lethal range were approached. Diethylthiocarbamate (DDC) also desynchronized the EEG. Yet when DDC and L-Dopa were combined a relative synchrony was observed. After isocarboxazid the threshold dose of L-Dopa for desynchrony was lowered well below the lethal range. D,L-Dihydroxy-phenylserine (DOPS) did not alter the EEG, either alone or in combination with isocarboxazid. Pretreatment with U-14,624 or a low dose of Ro 4-4602 did not affect the control EEG or the isocarboxazid-L-Dopa desynchrony. However, after Ro 4-4602 (central decarboxylase inhibited), the isocarboxazid-L-Dopa desynchrony was completely attenuated. Alterations in brain 5-hydroxytryptamine after the various drug treatments indicate that interactions involving this brain amine are very complex. The data support the conclusion that a centrally produced decarboxylated metabolite of L-Dopa is responsible for the EEG desynchrony and, tentatively, that this metabolite is dopamine. 44 references. (Author abstract)

**121067** Osterholm, Jewell L.; Mathews, George J. Dept. of Surgery, Div. of Neurological Surgery, Hahnemann Medical College and Hospital, 230 N. Broad St., Philadelphia, PA 19102 **Altered norepinephrine metabolism following experimental spinal cord injury. Part 2: protection against traumatic spinal cord hemorrhagic necrosis by norepinephrine synthesis blockade with alpha methyl tyrosine.** *Journal of Neurosurgery*. 36(4):395-401, 1972.

Alpha methyl tyrosine (AMT) immediately blocks tyrosine hydroxylase and therefore norepinephrine (NE) synthesis. In cats, AMT administered 15 minutes after spinal cord injury exerted a strong protective effect against hemorrhagic necrosis and lowered posttraumatic NE accumulation. Seventy percent of the spinal cords from animals so treated were normal or had only minor gray matter changes; all untreated animals developed severely destructive lesions. Three of four severely injured and AMT treated animals walked normally. These experiments strongly sup-

port the NE hypothesis of spinal cord injury; when NE hypersynthesis was prevented, the characteristic hemorrhagic necrotic lesions of the central gray did not occur. 14 references. (Author abstract)

**121072** Taylor, K. M.; Snyder, S. H. Johns Hopkins University School of Medicine, Baltimore, MD 21205 Dynamics of the regulation of histamine levels in mouse brain. *Journal of Neurochemistry*. 19(2):341-354, 1972.

The intraperitoneal administration of L-histidine in a dose of 1000mg/kg increased threefold the whole brain levels of histamine in the mouse. This increase was evident in all brain regions except the medulla oblongata - pons. The subcellular localization of histamine and histidine was the same in mice administered L-histidine as in saline treated animals. Cold exposure and restraint further augmented the elevation of histamine elicited by histidine treatment. Alpha-hydrazino-histidine and 4-bromo-3-hydroxybenzylamine (NSD-1055) but not alpha-methyl-Dopa inhibited histidine decarboxylase activity in mouse brain homogenates and prevented the increase in brain histamine after histidine administration. NSD-1055 and alpha-hydrazino-histidine also lowered brain levels of histamine by 50%. NSD-1055 lowered whole brain levels of histamine rapidly, with a half-life for the depletable histamine pool of about 5 min. Assuming that inhibition of histidine decarboxylase accounted for the reduction in histamine, then the rate of histamine decline reflects the rate of histamine turnover, and the results suggest that a portion of mouse brain histamine turns over quite rapidly. Reserpine lowered brain levels of histamine by about 50%, whereas the antihistaminic agent, dexbrompheniramine, and sodium pentobarbital elevated histamine levels. 37 references. (Author abstract)

**121174** Wise, C.David; Berger, Barry D.; Stein, Larry. Wyeth Laboratories, Philadelphia, PA 19101 Benzodiazepines: anxiety-reducing activity by reduction of serotonin turnover in the brain. *Science*. 177(4044):180-183, 1972.

The anxiety reducing effects of minor tranquilizers were studied by means of the rat conflict test. It was shown that these effects were mimicked by serotonin antagonists and by p-chlorophenylalanine, an inhibitor of serotonin synthesis. The depressant effects of the minor

tranquilizers were mimicked by norepinephrine antagonists. Intraventricular injections of serotonin led to a suppression of behavior, and also antagonized the anxiety reducing action of benzodiazepines. The anxiety reducing activity and the decrease in serotonin turnover induced by benzodiazepines were maintained over repeated doses, whereas depressant activity and the decrease induced in norepinephrine turnover both rapidly underwent tolerance. Tranquilizers may exert their anxiety reducing effects by a reduction of serotonin activity in a behaviorally suppressive punishment system, and they may exert their depressant effects by a reduction of norepinephrine activity in a behaviorally facilitative reward system. 21 references. (Author abstract modified)

**121181** Darby, F.J. Nuffield Unit of Medical Genetics, Department of Medicine, University of Liverpool, Liverpool, L69 3BX, England Inhibition by ethylmorphine and pentobarbitone in vitro of the metabolism of (ureyl-14C)tolbutamide by hepatic microsomal preparations from male and female rats treated with phenobarbitone. *Biochemical Pharmacology* (Oxford). 21(11):1649-1656, 1972.

Lineweaver-Burk plots for the hepatic microsomal metabolism in vitro of (ureyl-14C)tolbutamide, showing that ethylmorphine and pentobarbitone act as inhibitors in a mixed fashion, irrespective of the sex or phenobarbitone treatment of the rats, are discussed. Apparent Km values for the metabolism of (ureyl-14C)tolbutamide are similar for microsomes from male and female animals, whether phenobarbitone treated or not. Vmax is lower for female rats and is increased by phenobarbitone treatment of the animals to the same extent 2 and a half times as for male rats. The metabolism of (ureyl-14C)tolbutamide (0.4mM) by hepatic microsomes from female animals is poorly inhibited by pentobarbitone and ethylmorphine in vitro compared with the metabolism by microsomes from male animals. Phenobarbitone treatment of the animals in vivo increases the degree of inhibition of the microsomal metabolism by the higher concentrations relative to the lower concentrations of each inhibitor in vitro. 20 references. (Author abstract)

**121198** Breyer, Ursula. Institut für Toxikologie, Universität Tübingen, 74 Tübingen, Germany Accumulation and elimination of a novel metabolite



during chronic administration of the phenothiazine drug perazine to rats. *Biochemical Pharmacology* (Oxford). 21(10):1419-1429, 1972.

In an investigation of the metabolism of perazine (methyl-piperazinyl-propyl-phenothiazine), male Wistar rats were given the drug perorally in varying doses and for different periods of time. Liver, lung, kidney, spleen, and brain tissue were analyzed for their content of perazine and three of its metabolites by means of extraction and thin layer chromatography followed by ultraviolet spectroscopy. A metabolite resulting from piperazine ring cleavage, N-(gamma-phenothiazinyl-(10)-propyl-ethylenediamine (PPED), was found to accumulate in all tissues in a dose and time dependent fashion. After administration of 25 or 50mg/kg perazine for 7 days or longer, it was either the only or the most abundant metabolite present in the tissues. With a dose of 2 X 50mg/kg daily, high concentrations of desmethyl perazine (DMP) were attained in the lung, while PPED was the major metabolite in the other organs studied. Small quantities of perazine and gamma-(phenothiazinyl-(10))-propylamine were also present. After termination of a treatment with high perazine doses, the perazine and DMP levels declined rapidly in all tissues. In contrast, the PPED concentrations in the liver decreased at a much slower rate, and in extrahepatic tissues there was a transient increase followed by a very slow decline. In these tissues, PPED was still detectable 2 weeks after the last perazine dosage. These findings and the subcellular distribution in liver, characterized by a distinct concentration in mitochondria, suggest a strong binding of PPED to membrane proteins and/or lipids. 27 references (Author abstract modified).

**121204** Fuller, Ray W.; Schaffer, Robert J.; Roush, Betty Warren; Molloy, Bryan B. Lilly Research Laboratories, Eli Lilly, Indianapolis, IN Drug disposition as a factor in the lowering of brain serotonin by chloroamphetamines in the rat. *Biochemical Pharmacology* (Oxford). 21(10):1413-1417, 1972.

A study was conducted to determine what effect the blockade of parahydroxylation would have on the action of amphetamine and 2-, 3-, and 4-chloroamphetamine on brain serotonin in male Wistar rats. The brain serotonin content of rats treated 6 hours earlier was markedly reduced by 4-chloroamphetamine, slightly reduced by 3-

chloroamphetamine, and not changed by 2-chloroamphetamine or amphetamine. In rats pretreated with desmethylimipramine (DMI), the reduction of serotonin caused by 4-chloroamphetamine was unchanged, but 3-chloroamphetamine was as effective as 4-chloroamphetamine; amphetamine still had no effect, and 2-chloroamphetamine caused a slight elevation of serotonin. The levels of amphetamine, 2-chloroamphetamine, and 3-chloroamphetamine were too low to detect in the rat brain after 6 hours except in the rats pretreated with DMI to block parahydroxylation. The 4-chloroamphetamine levels in the brain were the same in controls and DMI pretreated rats; 4-chloroamphetamine and 3-chloroamphetamine, which lowered serotonin equally in the DMI pretreated rats, were both present mainly in the particulate fraction after high speed centrifugation of the brain homogenates, whereas the 2-chloroamphetamine was evenly distributed between the supernatant and particulate fractions, and the amphetamine was present mainly in the supernatant fraction. The intrinsic ability of these compounds to lower serotonin is better demonstrated in DMI pretreated rats in which the metabolic differences are minimized; thus 3-chloroamphetamine and 4-chloroamphetamine are equally active. The association of these two drugs with brain particulate material is suggested to be related to their reduction of serotonin content. 16 references. (Author abstract)

**121210** Shankaran, R.; Quastel, J.H. Kinsmen Laboratory of Neurological Research, Health Sciences Centre, University of British Columbia, Vancouver 8, B.C., Canada Effects of anesthetics on sodium uptake into rat brain cortex in vitro. *Biochemical Pharmacology* (Oxford). 21(12):1763-1773, 1972.

The effects of local anesthetics on sodium uptake into rat brain cortex were studied. Cocaine and lidocaine suppress the uptake of sodium ion into rat brain cortex slices incubated aerobically for 1 hour in the presence of protoveratrine or of ouabain or in the absence of glucose, but not in the presence of L- or D-glutamate. Tetrodotoxin has similar effects. The barbiturates (amytal, pentothal), used at anesthetic concentrations that completely block potassium, or electrically simulated brain respiration, have no such suppressing effect on sodium ion uptake. However, in calcium free media and under conditions where brain

respiration is being stimulated by the presence of protoveratrine or 30mM KCl or 0.3mM 2,4-dinitrophenol, the barbiturates exert significant depressions on both respiration and the uptake of sodium ion. It is inferred that the effects of local anesthetics and of tetrodotoxin on the uptake of sodium ion into brain slices are due to their block of the generation of action potentials, whereas those of the barbiturates are due to their suppression of mitochondrial metabolism, causing release of mitochondrial calcium ion and thereby resultant changes in the permeability of the cell membrane to sodium ion and potassium ion. 23 references. (Author abstract)

**121243** Castle, M.C.; Lage, G.L. Department of Pharmacology and Toxicology, School of Pharmacy, University of Kansas, Lawrence, KS 66044 **Effect of pretreatment with spironolactone, phenobarbital or beta-diethylaminoethyl diphenylpropyl-acetate (SKF 525-A) on tritium levels in blood, heart and liver of rats at various times after administration of (3H)digitoxin.** Biochemical Pharmacology (Oxford). 21(10):1449-1455, 1972.

The influence of spironolactone, phenobarbital, and beta-diethylaminoethyl diphenylpropylacetate (SKF-525-A) pretreatment on the tritium levels in the blood, liver, and heart of male Holtzman rats given (3H)digitoxin was investigated after various periods of time. The blood tritium levels of spironolactone pretreated rats were significantly lower than those of control animals 1 hour, 2 hours, 4 hours, and 8 hours after intraperitoneal administration of (3H)digitoxin. The tritium levels in the blood of the phenobarbital pretreated animals did not differ from those of the control animals at any of the time periods. The SKF-525-A pretreated animals had blood levels of tritium which were lower than those of the control animals after 1 hour, but they did not differ from those of the control animals after either 2 or 4 hours. The radioactivity in the hearts of the spironolactone pretreated animals was less than in the control animals after all time intervals except the 1-hour interval, while the radioactivity in phenobarbital pretreated animals did not differ from that of the control animals at any time period, and the radioactivity in the SKF-525-A pretreated animals differed from that of the controls only after the 8-hour interval. The tritium levels in the livers of the rats pretreated with spironolactone were greater than in the control animals after 1 hour, less at 4 hours, and did not

differ after 2 or 8 hours. The phenobarbital pretreatment altered the liver levels of radioactivity after any period of time. These results indicate that the spironolactone pretreatment markedly increases the metabolism and/or excretion of digitoxin, while the phenobarbital apparently does not affect these processes. The apparent inhibitory effects of SKF-525-A on digitoxin metabolism is seen only at 8 hours after the administration of digitoxin. 21 references. (Author abstract modified)

**121265** Matsushima, T.; Grantham, P.H.; Weisburger, E.K.; Weisburger, J.H. Biochemistry Division, National Cancer Center Research Institute, Tokyo, Japan **Phenobarbital-mediated increase in ring- and N-hydroxylation of the carcinogen N-2-fluorenylacetylamide, and decrease in amounts bound to liver deoxyribonucleic acid.** Biochemical Pharmacology (Oxford). 21(15):2043-2051, 1972.

The effect of phenobarbital (PB) pretreatment on the in vivo and in vitro metabolism of the carcinogen N-2-fluorenylacetylamide (FAA) in young male rats was studied. PB increased the urinary excretion of <sup>14</sup>C from labeled FAA, mainly as metabolites conjugated with glucuronic acid. There was a small drop in the excretion of sulphuric acid conjugates. In the glucosiduronic acid fraction, there were increases in the N-hydroxy and 7-hydroxy derivatives of FAA and a decrease in the 5-hydroxy compound, while the 3-hydroxy metabolite was virtually unchanged. The concentration of FAA metabolites in the liver was considerably lower, as was the amount of isotope bound to DNA. This important finding, correlated with a reduced carcinogenicity of FAA in rats given PB, is ascribed to increased conjugation with glucuronic acid and reduced formation of sulfate esters. The microsomal fraction in vitro from the livers of young rats yielded 7-hydroxy, 5-hydroxy, N-hydroxy, and 3-hydroxy derivatives of FAA. Carbon monoxide significantly inhibited the formation of the 7-hydroxy metabolite but elevated somewhat that of the N-hydroxy compound. Pretreatment with PB increased cytochrome P-450 and hydroxylation at all positions twofold to fourfold, the greatest effect being with N-hydroxy-FAA. With microsomes from PB-treated rat livers, carbon monoxide depressed hydroxylation at the 3-position, while N-hydroxylation was least affected. Because hydroxylation of FAA occurs at several well defined ring posi-

tions and on the amido nitrogen, FAA is a good substrate to explore the mechanisms of hydroxylation reactions. The data obtained suggest that these metabolic reactions are performed by a family of related enzyme systems. 52 references. (Author abstract).

**121274** Costall, B.; Naylor, R.J.; Olley, J.E. Postgraduate School of Studies in Pharmacology, University of Bradford, Bradford 7, Yorkshire, England On the involvement of the caudate-putamen, globus pallidus and substantia nigra with neuroleptic and cholinergic modification of locomotor activity. *Neuropharmacology* (Oxford). 11(3):317-330, 1972.

Both haloperidol and arecoline were shown to depress spontaneous motor activity. The effect of combining the two drugs was additive only. Small doses of haloperidol consistently stimulated activity. Modification of these effects by lesions in the caudate putamen, globus pallidus, and substantia nigra were studied. A depression of activity followed by stimulation was observed following the administration of arecoline to rats with bilateral lesions of the caudate putamen, the depressant effect being significantly reduced as compared with that in sham operated and control animals. Lesions of the caudate putamen did not modify the locomotor effects of haloperidol. The marked hyperactivity observed after bilateral lesions of the substantia nigra and pallidum was highly susceptible to depression by arecoline but not by haloperidol, the effects of the latter drug being respectively unmodified or abolished. Passage of an electrode to the nigra abolished the stimulant effect of haloperidol. A comparison of these results with previous work strongly suggests that the underlying mechanisms involved in the reduction of spontaneous motor activity are not the same as those involved in the production of catalepsy by neuroleptic and cholinergic drugs and therefore opposes the idea that the cataleptic effect of a drug is the extension of its depressant effect upon locomotor activity. 42 references. (Author abstract)

**121278** Kellogg, C.; Lundborg, P. Department of Pharmacology, University of Goteborg, Goteborg, Sweden Uptake and utilization of (3H)-5-hydroxytryptophan by brain tissue during development. *Neuropharmacology* (Oxford). 11(3):363-372, 1972.

The in vivo utilization of tritiated 5-hydroxytryptophan was analyzed separately in the hemi-

spheres, diencephalon, and brain stem of Sprague-Dawley rats during postnatal development. A time study of the concentration of 3H-5-hydroxytryptophan, 3H-5-hydroxytryptamine, and 3H-5-hydroxyindoleacetic acid in the respective brain regions following the s.c.injection of 3H-5-hydroxytryptophan demonstrated that the latter disappeared from the brain at a slower rate in rats of 1 and 4 days of age than in 21-day-old animals. The concentration of 3H-5-hydroxytryptamine and 3H-5-hydroxyindoleacetic acid over time followed that of the precursor. Pretreating animals with an inhibitor of peripheral decarboxylase, MK-486, indicated that the capacity of the decarboxylase in peripheral organs increases markedly with age and thus alters the appearance in the brain of the peripherally administered precursor. 10 references. (Author abstract)

**121279** Leonard, B.E.; Shallice, Susan A. Pharmacology Department, Imperial Chemical Industries Ltd., Pharmaceuticals Division, Alderly Park, Nr.Macclesfield, Cheshire, England The effects of some tryptamine derivatives on brain monoamines and their precursor amino acids. *Neuropharmacology* (Oxford). 11(3):373-384, 1972.

Fourteen tryptamine derivatives substituted on the side chain nitrogen, and/or in the five, six or seven position of the indole ring, were investigated for their effects on the gross behavior of rats, on reserpine induced hypothermia in mice, and on brain monoamines and their precursor amino acids. No clear relationship could be found between the behavioral effects and the neurochemical changes produced. Only four of the compounds produced detectable gross behavioral effects in rats in doses of up to 10mg/kg. There appeared to be little relationship between the structure of the compounds and their effects on the 10 neurochemical parameters studied. 29 references. (Author abstract)

**121282** Schlosser, W.; Horst, W.D.; Spiegel, H.E.; Sigg, E.B. Research Division, Hoffmann-LaRoche Inc., Nutley, NJ 07110 Apomorphine and its effects on the spinal cord. *Neuropharmacology* (Oxford). 11(3):417-426, 1972.

In unanesthetized spinal cats, i.v.injections of apomorphine depressed the transmission of the monosynaptic reflex from extensor, flexor, and dorsal root afferent sources. Polysynaptic discharges evoked from cutaneous afferents and from high threshold muscle afferents were effec-



tively reduced as was the dorsal root reflex. The spontaneous and reflex activation of flexor afferents were initially depressed, then excited at higher concentrations of the drug. The effect of apomorphine is direct and not associated with the release of endogenous catecholamines since pretreatment with reserpine and alpha-methyl-tyrosine did not prevent its action. Haloperidol blocked the depressant effect of apomorphine, whereas phenoxybenzamine, chlorpromazine, and propranolol did not. It is concluded that apomorphine, which is claimed to act on central dopamine receptors, has distinct effects on spinal cord activity and that these effects are only partially similar to those of dopamine. 20 references. (Author abstract modified)

121283 Jarlstedt, J.; Dahlstrom, A. Institute of Neurobiology, University of Goteborg, Goteborg, Sweden Preliminary note: changes in RNA-content of sympathetic ganglion cells of reserpine-pretreated rats. *Neuropharmacology* (Oxford). 11(3):447-450, 1972.

The RNA content of rat lumbar sympathetic ganglion cells was determined at various intervals following the intraperitoneal injection of 10mg/kg of reserpine. The RNA content was significantly increased 36, 48, and 72 hours after the pretreatment and returned close to normal after 11 days. The RNA levels reached maximum values of about 130% greater than normal between 36 and 48 hours following the injection. The changes in the nucleic acid seemed to be well correlated with the changes in the synthesis and axonal transport of amine storage granules in the rat lumbar sympathetic ganglion cells in the reserpine treated rats. 11 references (Author abstract modified)

121287 Price, Paul J.; Suk, William A.; Spahn, Gerard J.; Freeman, Aaron E. Microbiological Associates, Inc., Bethesda, MD 20014 Transformation of Fischer rat embryo cells by the combined action of murine leukemia virus and (-)-trans-delta9-tetrahydrocannabinol. *Proceedings of the Society for Experimental Biology and Medicine*. 140(2):454-456, 1972.

Inoculation with (-)-trans-delta9-tetrahydrocannabinol (delta9-THC) was found to transform high passage Fischer rat cells chronically infected with Rauscher leukemia virus, but the transformation could be demonstrated only after extended subculture (13 passages) of the cells. Under the same conditions, control cultures and cultures treated

with (-)-trans-delta8-tetrahydrocannabinol, cannabinal, or trans-cannabidiol were not transformed after 20 passages. In contrast, cultures treated with 3-methylcolanthrene (3MC) were transformed after three subpassages. It is concluded that, although delta9-THC is the most active of the major cannabinoids as a transforming agent, its activity is weak compared to that of 3MC. 7 references. (Author abstract modified)

121289 Harris, Patrick D.; Greenwald, E.Kenneth; Longnecker, David E. Microcirculatory Systems Research Group, School of Medicine, University of Missouri, Columbia, MO 65201 Microcirculatory responses in the bat wing to glucagon with and without barbiturate anesthesia (36515). *Proceedings of the Society for Experimental Biology and Medicine*. 104(2):613-616, 1972.

The wings of bats which were either unanesthetized or anesthetized with barbiturates were directly observed using closed circuit television microscopy; the purpose of the investigation was to determine the responses of the subcutaneous small arteries and veins to glucagon. No statistically significant venular response was observed in either the awake or anesthetized bats. An apparent, but not statistically significant increase in arterial diameter was observed 10 minutes after 130mg/kg of glucagon was injected intraperitoneally into the anesthetized animals. When the animals were pretreated with 20mg/kg of thiopental, the small arteries dilated significantly following the administration of glucagon; the arterial diameters returned to normal within 30 minutes. There were no glucagon induced changes in diameter following pretreatment with 50mg/kg of either pentobarbital or thiopental. It is concluded that glucagon could produce significant reductions in peripheral resistance if other organ systems were to respond in a manner similar to that of subcutaneous tissue. 17 references.

121296 Bartolini, A.; Domino, E.F. Department of Pharmacology of the University of Michigan, Ann Arbor, MI Studies on the paradoxical interaction of physostigmine and pentobarbital on regional brain acetylcholine content of various animal species. *Archives Internationales de Pharmacodynamie et de Therapie* (Ghent). 196(Supplement):129-130, 1972.

The effect of physostigmine and pentobarbital on the acetylcholine (ACh) content of various

areas of cat and rat brain, as well as the effect of physostigmine, scopolamine, and mecamlamine on the cortical release of ACh in the cat brain, was investigated. The ACh content of the visual cortex, caudate nucleus, and hippocampus of the cat brain was significantly increased following the injection of pentobarbital or pentobarbital with physostigmine. Both substances effected the same increase in ACh in the hippocampus and caudate nucleus, but the pentobarbital alone effected a significantly greater increase in the ACh level of the visual cortex than did the pentobarbital with physostigmine. In rats, the cortical content of ACh was significantly lower after pentobarbital plus physostigmine than after pentobarbital alone; however, the ACh content of the brain as a whole was increased to an equal degree by both substances. It was further demonstrated that physostigmine increases the cortical release of ACh in brainstem transected cats and that the same degree of ACh release can be effected by physostigmine following the topical application of scopolamine. The physostigmine effected release of ACh was partially inhibited following the i.v. injection of scopolamine, however. The i.v. injection of mecamlamine does not prevent physostigmine induced release of ACh. It is concluded that the release of cortical ACh is governed by a subcortical muscarinic mechanism. 5 references.

121297 Nistico, G.; Marley, E. University of Naples, Naples, Italy Central effects of amines in adult fowls. *Archives Internationales de Pharmacodynamie et de Therapie* (Ghent). 196(Supplement):136-137, 1972.

Intravenous injections of (-)-noradrenaline, (-)-alpha-methylnoradrenaline and (-)-isoprenaline evoked behavioral and electrocortical sleep in adult chickens and lowered their body temperatures by 1.75 to 2.25 degrees C. Similarly, although intraventricular dopamine was ineffective, intrahypothalamic dopamine induced sleep for 30 minutes in one of three birds. Following pretreatment with mebanazine, both intraventricular and intrahypothalamic dopamine effected immediate sleep lasting over four hours and lowered body temperatures by 1.75 degrees C. The birds also exhibited repetitive jerking movements of the head in a direction opposite to the side of infusion. Mebanazine also potentiated the central effects of noradrenaline. These effects were not produced by either AMP or dibutyryl cyclic AMP,

although AMP did effect sleep and produced a fall in body temperature following pretreatment with aminophylline. Tryptamine and alpha-methyltryptamine given intraventricularly or intrahypothalamically induced arousal, vocal and postural changes and an increase in respiratory rate and body temperature. In fowl encephale isole preparations, intrahypothalamic injections of alpha-methyltryptamine induced behavioral and electrocortical sleep. The excitatory effects of tryptamine and dexamphetamine were antagonized by intrahypothalamically injected noradrenaline. It is concluded that centers mediating arousal and sleep are present in the hypothalamus of adult fowl and that these centers are sensitive to tryptamine and the catecholamines. 7 references.

121298 Samanin, R.; Valzelli, L. Istituto di Ricerche Farmacologiche 'Mario Negri,' Via Eritrea 62, 20157, Milan, Italy Serotonergic neurotransmission and morphine activity. *Archives Internationales de Pharmacodynamie et de Therapie* (Ghent). 196(Supplement):138-141, 1972.

Electrodes were implanted in the nucleus raphe dorsalis (DR) regions of female Sprague-Dawley rats and their analgesic responses to morphine were tested. It was found that doses of 2 to 4mg/kg s.c. of morphine produced analgesia in rats which had been previously stimulated in the DR region for one hour; the morphine produced no analgesic effect in implanted rats which had not been stimulated. The potentiating effect of stimulation was maximal during the period of greatest increase in the level of forebrain 5-hydroxyindoleacetic acid (5HIAA); stimulation of the lateral DR region, which did not effect any increase in the forebrain 5HIAA levels, did not potentiate the effect of morphine. It was also found that 5mg/kg i.p. of morphine produced hyperthermia, and 30mg/kg i.p. a marked hypothermia in sham lesioned rats, as well as in rats lesioned laterally to the nucleus medianus of the midbrain raphe (MR). Both of these effects were abolished in MR lesioned rats. The lesioned animals still responded with morphine induced hyperthermia or hypothermia when they were treated with 2,4-dinitrophenol or phentolamine, neither of which apparently interferes with brain serotonin. It is concluded that morphine modifies body temperature and the animal sensitivity to painful stimuli by interacting with brain serotonin. 10 references.



**121302** Downing, O.A. Department of Pharmacy, University of Aston in Birmingham, Gosta Green, Birmingham B4 7ET, England The effects of procaine, amylobarbitone on drug induced changes in the surface potentials of an isolated sympathetic ganglion. *British Journal of Pharmacology* (London). 45(1):159P-160P, 1972.

The effects of procaine and amylobarbitone on the dose response curves of depolarization to carbachol on the isolated superior cervical ganglion of the rat were investigated. The ganglion blocking agents hexamethonium, tetraethylammonium, and pempidine, in concentrations which just abolished transmission, caused a parallel shift to the right of the dose response curves of depolarization for carbachol, with some variable degree of depression of the maximum depolarization. Procaine and amylobarbitone in concentrations which just abolished transmission did not produce any parallel shift of the dose response curves but depressed the mean maximum values of depolarization by 41.2% and 65.4% respectively. The effects of procaine and amylobarbitone on the rate of recovery of the ganglion from the depolarizing effects of nicotine were then investigated. It was found that procaine increased the rate of recovery to isopotential when added to the bath immediately following the removal of the nicotine; the amylobarbitone had no effect, even in high concentrations. These results may indicate that procaine has a selective component of action on the nicotinic receptor at the ganglion site and that amylobarbitone lacks this component. 4 references.

**121305** Leonard, B.E. Pharmacology Section, Organon N.V., OSS, Holland Some effects of the hallucinogenic drug 2,5-dimethoxy-4-methylamphetamine on the metabolism of biogenic amines in the rat brain. *British Journal of Pharmacology* (London). 45(1):165P-166P, 1972.

At the March Proceedings of the British Pharmacological Society, a paper was presented on the effects of 2,5-dimethoxy-4-methylamphetamine on the metabolism of biogenic amines in rat brain. It has been found that high doses of 2,5-dimethoxy-4-methylamphetamine (DOM) cause piloerection, behavioral stimulation, and pronounced head twitching in animals. DOM also reduces the brain concentration of noradrenaline and elevates that of 5-hydroxytryptamine; brain dopamine is initially elevated and then reduced by the drug. In

addition, it was found that DOM increases the rate of incorporation of tyrosine into noradrenaline and reduces the rate of incorporation of tryptophan into 5-hydroxytryptamine. It has no detectable effect on the incorporation into dopamine. DOM also reduces the depletion of brain 5-hydroxytryptamine following the administration of p-chlorophenylamine. It is suggested that DOM may increase the turnover of noradrenaline and reduce that of 5-hydroxytryptamine in the brain. 6 references.

**121308** Macleod, Valerie H. Department of Physiology, University of Birmingham, Birmingham, England The influence of some centrally acting drugs on sympathetic nerve activity. *British Journal of Pharmacology* (London). 45(1):194P-195P, 1972.

At the March Proceedings of the British Pharmacological Society, a paper was read on the influence of centrally acting drugs on sympathetic nerve activity. L-dopa was administered i.p. along with a peripheral dopa decarboxylase inhibitor to unanesthetized, decerebrate cats in the thoracic spinal cord region. The L-dopa had little apparent effect on spontaneous sympathetic nerve activity, but it was found to depress the reflex activity recorded from preganglionic and postganglionic sympathetic nerves in response to stimulation of the spinal afferent nerves. In anesthetized animals which had been pretreated with reserpine, the spontaneous activity in the preganglionic and postganglionic sympathetic nerves was indistinguishable from that in normal animals. When the reserpine was given only 4 hours prior to the anesthesia, however, the spontaneous activity in the preganglionic and postganglionic sympathetic nerves increased considerably, and the effectiveness of baroreceptor stimulation in inhibiting sympathetic nerve activity was decreased. Alpha-methyl dopa was found to have little effect on the spontaneous activity recorded from preganglionic and postganglionic nerves in unanesthetized cats. It is concluded that there is an inhibitory monoaminergic link between the medulla and the lateral horn cells of the thoracic spinal cord. 1 reference.

**121314** Lazare, R.; Watson, P.A. Smith and Nephew Research Ltd., Gilston Park, Harlow, Essex, United Kingdom Inhibition of dopa decarboxylase in the rat by a series of benzyloxyamines. *Journal of Pharmacy and Pharmacology* (London). 24(5):361-366, 1972.

A series of 11 benzyloxyamines has been evaluated for in vitro and in vivo inhibition of dopa decarboxylase. The effect of these inhibitors on the rise in (14C) amines in the brain after (14C)dopa has also been assessed. Of these compounds, 3/4-dihydroxybenzyloxyamine appears to be a potent selective peripheral inhibitor of dopa decarboxylase. Its activity is similar to that of Ro 4-4602 (N1-(DL-seryl)-N2-(2,3,4-trihydroxybenzyl)hydrazine). 15 references. (Author abstract)

**121318** Ho, Beng T.; Estevez, Vicente; Englert, Leo F.; McIsaac, William M. Texas Research Institute of Mental Sciences, Houston, TX 77025 Delta9-tetrahydrocannabinol and its metabolites in monkey brains. *Journal of Pharmacy and Pharmacology* (London). 24(5):414-416, 1972.

The metabolic alteration of delta9-tetrahydrocannabinol (delta9-THC) in squirrel monkey brains is examined at various times after its administration. Delta9-THC entered the brain rapidly with a maximum accumulation of 4% of the injected radioactivity at 30 minutes, at which time the unchanged compound and the 11-hydroxylated metabolite (11-OH-delta9-THC) accounted for 84 and 8% of the total radioactivity in the brain. An average 28% decrease of radioactivity was observed from 30 minutes to one hour, but the ratio of delta9-THC and 11-OH-delta9-THC was not vastly altered. At four hours, 33% of the radioactivity found at 30 minutes still remained in the brain while the percentage of hydroxylated metabolite increased and the unchanged compound decreased from the one hour interval. Neither 8,11-dihydroxylated metabolite nor cannabinol from delta9-THC was detected in the monkey brains. No isomerization of delta9-THC to the more stable delta8-THC isomer was observed. 14 references.

**121320** Knapp, Suzanne; Mandell, Arnold J. Department of Psychiatry, University of California at San Diego, La Jolla, CA 92037 Narcotic drugs: effects on the serotonin biosynthetic systems of the brain. *Science*. 177(4055):1209-1211, 1972.

The effects of short- and long-term administration of morphine on the activity of two measurable forms of male, Sprague-Dawley rat brain tryptophan hydroxylase were studied. Morphine administration produced an immediate decrease and a long-term increase in the nerve ending (particulate) enzyme activity but did not change the cell body (soluble) enzyme activity. Cocaine

administration demonstrated a short-term decrease in measurable nerve ending enzyme activity that was due to the inhibition of the high affinity uptake (the Michaelis constant,  $K_m$ , is 10-5 molar) of tryptophan. The serotonin precursor and the enzyme activity appeared to be drug sensitive regulatory processes in the biosynthesis of serotonin. 17 references. (Author abstract)

**121326** Vacha, J.; Seifert, J. Institute of Pharmacology, Czechoslovak Academy of Sciences, Albertov 4, Prague 2, Czechoslovakia Decrease of ribonuclease activity of isolated rat liver cytoplasmic ribosomes after the phenobarbital administration. *Biochemical Pharmacology* (Oxford). 21(15):2156-2159, 1972.

The RNase activities of isolated liver ribosomes were investigated following the administration of phenobarbital (PB) to male Wistar rats. One g/l of phenobarbital solution was administered to the rats in their drinking water for 7 days, after which the animals were sacrificed and ribosomes prepared from their livers. It was found that pretreatment with PB decreased the ribonuclease activity of the ribosomal particles, while the addition of PB in vitro did not affect the activity of the liver RNases. It was also found that the intensity of RNA degradation was significantly affected by the method of ribosome isolation used. The ribosomes isolated with the aid of 1% deoxycholate (DOC) exhibited lower absolute values of ribonuclease activity than ribosomes prepared with 2% Triton X-100. Further, the ribonuclease activity of ribosomes isolated with 2% Triton X-100 was markedly affected by the concentration of KCl in the isolation medium, while the activity of ribosomes isolated with 1%DOC is practically independent of the KCl concentration. The addition of p-chloromercuribenzoate (p-CMB) to the incubation medium increased the ribosomal ribonuclease activity in the DOC isolated ribosomes and decreased the activity in both the DOC and Triton X-100 prepared ribosomes; EDTA increased the ribonuclease activity in both the DOC and Triton X-100 prepared ribosomes; magnesium ion decreased the activity in both the DOC and Triton X-100 prepared ribosomes and spermidin decreased the activity in the DOC prepared ribosomes and did not affect the Triton X-100 ribosomes. It is concluded that there is a qualitative difference between the different ribosomal preparations following the application of PB and that it is not possible to decide whether

the differences in the ribosomal RNase activity are due to an overall lower activity of the RNase which is in functional association with the ribosomes or to other factors. 26 references.

**121354 Sanders-Bush, E.; Bushing, J.A.; Sulser, F.** Department of Pharmacology, School of Medicine, Vanderbilt University, Nashville, TN **p-Chloroamphetamine--inhibition of cerebral tryptophan hydroxylase.** *Biochemical Pharmacology* (Oxford). 21(10):1501-1510, 1972.

The findings obtained from an investigation of the effects of p-chloroamphetamine and p-chloromethamphetamine on the activity of cerebral tryptophan hydroxylase in male Sprague-Dawley rats are presented. The in vitro addition of either p-chloroamphetamine or p-chloromethamphetamine does not reduce the activity of tryptophan reduce the activity of tryptophan hydroxylase isolated from the brainstems of rats. Under similar conditions, p-chlorophenylalanine causes marked inhibition. However, when tryptophan hydroxylase was assayed in preparations obtained from the brains of rats treated 16 hours previously with p-chloroamphetamine, a dose related reduction in the activity of the enzyme was observed. Experiments involving various combinations of enzyme preparations from control rats and from rats pretreated with p-chloroamphetamine do not indicate the presence of an inhibitor in the preparations isolated from the rats pretreated with the drug. Moreover, the reduction in enzyme activity was not removed by dialysis. Kinetic studies showed that the Km values for tryptophan and 2-amino-4-hydroxy-6,7-dimethyl-5,6,7,8-tetrahydropyridine (DMPH4) were the same for the enzyme isolated from the control rats and from the rats pretreated with p-chloroamphetamine. The reduction of cerebral 5-hydroxytryptamine (5HT) and the decrease in the activity of tryptophan hydroxylase occur simultaneously; both effects are still present 6 days following a single dose of 10mg/kg of p-chloroamphetamine. The inhibition of cerebral tryptophan hydroxylase by p-chloroamphetamine can therefore satisfactorily explain the prolonged reduction in the levels of 5HT and 5-hydroxyindole acetic acid in the brain. 27 references. (Author abstract modified)

**121355 Clark, A.G.; Jovic, R.; Ornellas, Maria R.; Weller, M.** Department of Biochemistry, Victoria University of Wellington, Wellington, New

**Zealand Brain microsomal protein kinase in the chronically morphinized rat.** *Biochemical Pharmacology* (Oxford). 21(14):1989-1990, 1972.

A study was conducted to determine the effect of chronic treatment with morphine on rat brain microsomal protein kinase activity. When tolerance and a clearly defined abstinence syndrome had been produced in Wistar albino rats as a result of chronic administration of morphine, the abstinent animals were sacrificed along with a group of untreated rats and a group of animals which had been given a single acute dose of morphine, and their brain microsomal protein kinase activity was determined using biochemical assay techniques. It was found that protein kinase activity in the absence of cyclic adenosine monophosphate (AMP) was not changed in the acutely dosed animals relative to the untreated animals, whereas it was depressed in chronically morphinized rats and elevated in the abstinent animals. AMP was observed to stimulate activity in all preparations. The variation in the activity of protein kinase under different conditions of morphine treatment resembles the effect of microsomal adenosine triphosphatase (ATPase) and complements the effects of other microsomal enzymes. At present there is insufficient evidence to determine whether these various effects are independent or related phenomena or what the relationship is between the observed changes in enzyme activity and the development of tolerance to morphine. However, it has been postulated that the protein kinase examined in this work is involved in the repolarization of electrically excited tissue. It therefore seems possible that the elevated activity of this enzyme in the abstinent animals might contribute directly to the signs of the abstinence syndrome. 7 references.

**121357 Hartley, R.; Smith, J.A.** Department of Pharmaceutical Chemistry, School of Pharmacy, University of Bradford, Bradford 7, England **Inhibition of catecholamine oxidation by indoles.** *Biochemical Pharmacology* (Oxford). 21(15):2007-2012, 1972.

On the basis of an investigation of the inhibition of catecholamine oxidation by indole metabolites, various 5-substituted indoles are shown to inhibit effectively both the enzymatic and autoxidation of dopamine. The inhibition of the enzymatic oxidation is suggested by kinetic studies to be noncompetitive. 5-Hydroxyindoles are also shown to inhibit the enzymatic oxidation



of 3,4-dihydroxyphenylalanine. It would appear that any modulation of catecholamine activity by indoles would not be affected by catecholamine-indole complex formations. 10 references. (Author abstract modified)

**121402** Baker, G.F.; Rogers, H.J. Department of Physiology, Bedford College, London, N.W.1, England **Effects of psychotropic drugs on the erythrocyte permeability to glucose and ethylidene glucose.** *Biochemical Pharmacology* (Oxford). 21(3):1871-1878, 1972.

The effect of chlorpromazine (CPZ) and a number of central nervous system (CNS) depressant drugs on glucose penetration through human erythrocyte membrane has been investigated by an optical technique. CPZ accelerated glucose exit at concentrations between 0.00001 and 0.00002M at 36 degrees but at higher concentrations inhibited transfer. This inhibition was rapidly and completely reversible. CPZ, trifluoperazine, prochlorperazine, promazine, and promethazine were found to inhibit glucose exit approximately in the order of their chemotherapeutic potency. Imipramine also showed this effect but nealbaritone, thiopentone, and haloperidol did not. CPZ affects the entry of glucose into erythrocytes in a biphasic manner similar to its effect on exit, but at all concentrations it accelerates the penetration of ethylidene glucose, which enters by diffusion. CPZ had no effect on the inhibition of glucose transfer produced by incubation with dinitrofluorobenzene (DNFB) or on the enhancement of this inhibition by incubation in the presence of glucose and 2-deoxyglucose. It is suggested that at low concentrations CPZ accelerates the movement of the glucose carrier within the membrane by effects on its charge environment. At higher concentrations interaction with the protein of both membrane and carrier presumably causes interference with carrier movement until, at high concentrations, hemolysis occurs. The relevance of these effects to the pharmacological action of CPZ is discussed. 24 references. (Author abstract)

**121522** Walters, Judith R.; Roth, Robert H. Department of Pharmacology and Psychiatry, Yale University School of Medicine, New Haven, CT 06510 **Effect of gamma-hydroxybutyrate on dopamine and dopamine metabolites in the rat striatum.** *Biochemical Pharmacology* (Oxford). 21(15):2111-2121, 1972.

Gamma-butyrolactone (GBL), a precursor for the naturally occurring central nervous system depressant, gamma-hydroxybutyrate (GHB), administered in anesthetic doses, produces an increase in rat corpus striatum dopamine levels without affecting norepinephrine or serotonin levels. The rise and fall of the dopamine levels coincide with the changes in the levels of brain GHB and the behavioral effects of the drug. The specific activity of striatal dopamine was found to be greater in rats injected with 3H-tyrosine shortly before or shortly after GBL, as compared with controls which were not treated with GBL. The specific activity of cortical norepinephrine in GBL treated rats was not significantly different from that observed in untreated controls. No significant difference was observed in blood or striatal tyrosine specific activity in GBL treated rats. The levels of dopamine metabolites, dihydroxyphenylacetic acid and homovanillic acid, also increased in the corpus striatum after GBL, but the increase did not occur until after the brain levels of GHB began to fall. These results suggest that the drug either increases dopamine synthesis and/or blocks the release of dopamine from a rapidly turning over functional compartment within the neurons, or both. Perhaps as a result of the ability of GHB to block the release of dopamine, this drug also interferes with the metabolism of dopamine for a certain period of time after administration. 37 references. (Author abstract)

**121546** Hassinen, Ilmo E.; Ylikahri, Reino H. Department of Medical Chemistry, University of Helsinki, 00170 Helsinki 17, Finland **Mixed function oxidase and ethanol metabolism in perfused rat liver.** *Science*. 176(4042):1435-1437, 1972.

Oxidation reduction changes of cytochrome P-450 and oxygen consumption were measured in isolated perfused livers from normal and phenobarbital treated rats. Phenobarbital treatment markedly increased the aminopyrine induced reduction of cytochrome P-450, but ethanol did not cause any redox changes of this cytochrome. It was concluded that the microsomal ethanol oxidizing system has an insignificant role in the metabolism of ethanol in intact liver. 21 references. (Author abstract)

**121551** Levin, W.; Sernatinger, E.; Jacobson, M.; Kuntzman, R. Department of Biochemistry and Drug Metabolism, Hoffmann-La Roche, Inc.,

Nutley, NJ 07110 **Destruction of cytochrome P450 by secobarbital and other barbiturates containing allyl groups.** *Science*. 176(4041):1341-1343, 1972.

Administration of certain commonly used barbiturates containing allyl groups, such as secobarbital, allobarbital, or aprobarbital to rats treated chronically with a microsomal enzyme inducer causes a rapid destruction of the liver microsomal hemoprotein that serves as the terminal oxidase for drug metabolism. In contrast, barbiturates without an allyl group do not have this effect. The decrease in this hemoprotein, cytochrome P450 by the barbiturates containing an allyl group could also be demonstrated in an in vitro liver microsomal system requiring reduced nicotinamide adenine dinucleotide phosphate. These results suggest that the barbiturates containing an allyl group are converted to a metabolite that leads to the destruction of cytochrome P450. 19 references. (Author abstract)

121634 Bronaugh, Robert L.; Erwin, V.Gene. University of Colorado, School of Pharmacy, Boulder, CO 80302 **Further characterization of a reduced nicotinamide-adenine dinucleotide phosphate-dependent aldehyde reductase from bovine brain: inhibition by phenothiazine derivatives.** *Biochemical Pharmacology* (Oxford). 21(10):1457-1464, 1972.

The catalytic activity of partially purified NADPH linked aldehyde reductase (alcohol:NADP oxidoreductase, EC 1.1.1.2) from bovine brain was inhibited by certain phenothiazines. The inhibition was competitive with respect to either NADPH or aldehyde as substrate and was found to vary with the pH of the reaction mixture. At pH 7.4 the inhibitor constants ( $K_i$  values) for chlorpromazine, trifluoperazine, and thioridazine were 0.0007M, 0.00033M, and 0.0008M respectively. Promethazine ( $K_i$  value of 0.00458M) was approximately 10 times less effective than chlorpromazine in producing inhibition of enzyme activity. In addition, chlorpromazine sulfoxide did not inhibit the rate of aldehyde reduction at concentrations as high as 0.001M. When the  $K_i$  values for the various phenothiazines were compared with the reported ability of these compounds to abolish the unconditioned avoidance response in rats, it was observed that compounds with the lowest  $K_i$  values had the lowest ED50 for the abolition of this response. Studies of product inhibition of bovine brain aldehyde reduc-

tase showed that either NADP or p-nitrobenzylalcohol were competitive inhibitors with NADPH or aldehyde as the variable substrate. These observations, together with the nature of the inhibition produced by the phenothiazine compounds, strongly indicate a random order of addition of substrates to the enzyme. 20 references. (Author abstract)

121836 Puyear, R.L.; Paulson, G.D. Zoology Department, North Dakota State University, University Station, Fargo, ND 58102 **Effect of carbaryl (1-naphthyl N-methylcarbamate) on pentobarbital-induced sleeping time and some liver microsomal enzymes in white leghorn cockerels.** *Toxicology and Applied Pharmacology*. 22(4):621-627, 1972.

White Leghorn cockerels were given a po dose of carbaryl (1-naphthyl N-methylcarbamate) at the rate of 0, 10, 25, 50, 100, 200, 300, or 400mg/kg of body weight for three or six days and its effects on sleeping time and some liver microsomal enzymes were studied. Carbaryl treatment of 100mg/kg and above caused a decrease in sodium pentobarbital-induced sleeping time and an increase in the liver weight. Carbaryl treatment at 100mg/kg and above caused an increase in liver aniline hydroxylase activity. Liver aminopyrine demethylase activity increased after treatment with carbaryl at the rate of 200mg/kg or more. A slight and variable increase in liver cytochrome P450 content occurred after treatment with 300 or 400mg of carbaryl per kg of body weight. Pretreatment of cockerels with sodium pentobarbital caused little change in the rate of excretion of C14 given as 1-naphthyl-1-C14 N-methylcarbamate. 20 references. (Author abstract)

121876 Akshabayeva, K.A. Rostovskiy Meditsinskiy Institut, Rostov, USSR **Effect of aminazine and imisine on metabolism of dicarboxylic amino acids and their derivatives (glutamine and gamma amino butyric acid) in cat brain.** *Vliyaniye aminazina i imizina na obmen dikarbonovykh aminokislot i ikh proizvodnykh (glutamina i gamma aminomaslyanoy kisloty) v golovnom mozge koshek.* *Ukrayins'kyi Biokhimichniy Zhurnal* (Kiev). 44(2):182-185, 1972.

Injections of aminazine and imisine cause changes in cat brain in the ammonia glutamine dicarboxylic amino acid systems. The resulting changes are dependent on the pharmacological properties of aminazine and imisine and on the given dosages. Both aminazine and imisine in-



crease the ammonia content, but the glutamine content is increased by aminazine and decreased by imisine. The content of free dicarboxylic amino acids is decreased by aminazine and not changed by imisine. Aminazine and imisine also influence the regulation system of ammonia content. Aminazine maintains high activity of the regulation system, but imisine does not. 23 references. (Journal abstract modified)

**121877** Honcharova, K.O.; Parkhomets, P.K. Instytut Biokhimii Akademii Nauk Ukrainy's'koy RSR, Kiev, USSR /Effect of melipramine on carbohydrate metabolism in rabbit brain./ Vplyv melipraminu na vuhlerodnyy obmin u holovnomu mozgu kroliv. Ukrain's'kyi Biokhimichnyi Zhurnal (Kiev). 44(2):149-153, 1972.

Increases in the glucose and glycogen content of the rabbit brain are the changes in the carbohydrate metabolism of the brain which are caused by injections of the antidepressant, melipramine. The effect of melipramine on the activity of the rabbits tested is a tranquilizing, sedative one. Small dosages (5 and 10mg/kg) of melipramine, given in single and prolonged injections into a rabbit brain, do not cause any changes in the content of glycogen, glucose, lactic acid or in the hexokinase activity in the rabbit brain. A large dose (50mg/kg) of melipramine injected similarly into a rabbit brain increases considerably only the glucose content in the rabbit brain. When dealing with individual parts of the rabbit brain, only the glycogen content increases, especially in the cerebellum, after single injections of melipramine in small doses (5 to 10mg/kg). A single injection of reserpine doubles the glucose content in the cerebellum. A 10mg/kg dose of melipramine injected into the cerebellum a half hour before an injection of reserpine, increases the glucose content three times the original amount and the glycogen content one fourth its original amount. 22 references. (Journal abstract modified)

**121878** Honcharova, K.O.; Kocherha, V.J.; Chuhai, H.M. Instytut Biokhimii Akademiyi Nauk Ukrainy's'koi RSR, Kiev, USSR /Effect of melipramine on carbohydrate and monoamine metabolism in brain of reserpinized rats./ Vplyv melipraminu na obmin vuhlevodiv i monoaminiv u holovnomu mozgu rezepinizovanykh shchuriv. Ukrain's'kyi Biokhimichnyi Zhurnal (Kiev). 44(2):154-159, 1972.

The content of serotonin, noradrenaline, glycogen, lactic acid and the phosphorylase activity in the rat brain are first examined under conditions of depression caused by prolonged injections of reserpine. Multiple melipramine injections, given before reserpine injections, partially remove the depression and cause some changes in the substances under examination. Injections of melipramine increase the content of glycogen in the brain of reserpinized rats, and that increase causes the activity of the rat to be indicative of a partial recovery from depression. The content of monoamines decreases in the brain of reserpinized rats during a depressed state. The content of monoamines did not change after melipramine injections, however. Because of the absence of changes in the phosphorylase activity of the rat brain after prolonged injections of reserpine as well as melipramine shortly followed by reserpine, it is possible that changes in the glycogen content are not connected with changes in the absolute level of noradrenaline in the brain. 20 references. (Journal abstract modified)

**121963** Bell, James A.; Anderson, Edmund G. Department of Pharmacology, University of Illinois, College of Medicine, Chicago, IL 60612 The influence of semicarbazide-induced depletion of gamma-aminobutyric acid on presynaptic inhibition. Brain Research (Amsterdam). 43(1):161-169, 1972.

Administration of semicarbazide to acute spinal cats resulted in a gradual and complete suppression of the dorsal root reflex and dorsal root potential. Semicarbazide also produced marked reduction in the long latency inhibition as measured by monosynaptic testing. The time course of these effects correlated with the time course of the semicarbazide induced depletion of gamma-aminobutyric acid (GABA) in the spinal cord. Semicarbazide had little or no effect on monosynaptic and polysynaptic reflexes or postsynaptic inhibition. These results are consistent with the hypothesis that GABA is involved in the mediation of presynaptic inhibition. 20 references. (Author abstract)

**121964** Levy, Richard A.; Anderson, Edmund G. Department of Pharmacology, University of Illinois, College of Medicine, Chicago, IL 60612 The effect of the GABA antagonists bicuculline and picrotoxin on primary afferent terminal excitability. Brain Research (Amsterdam). 43(1):171-180, 1972.

The effects of the convulsants bicuculline, picrotoxin, and strychnine on the polarization of gastrocnemius Ia primary afferent terminals have been ascertained in cats with the excitability testing technique. Phasic increases in the excitability of these terminals were induced by conditioning stimuli applied to the hamstring nerve. Bicuculline blocked the phasic excitability increases without appreciably altering the tonic state of terminal excitability. Picrotoxin also blocked phasic increases and in addition increased the tonic excitability of the terminal. Convulsant doses of strychnine failed to block phasic excitability increases but in larger doses increased tonic excitability. The capacity of the gamma-aminobutyric acid (GABA) antagonists bicuculline and picrotoxin to block phasic increases in terminal excitability supports the hypothesis that the presynaptic inhibitory pathway contains a GABA synapse. Although its position remains uncertain, these data can best be explained by locating this synapse at a site removed from the afferent terminal where it functions to disinhibit tonically active interneurons which depolarize the terminal. 28 references. (Author abstract)

**121965** Whittaker, V.K.; Watkins, J.C. MRC Neuropsychiatry Unit, Medical Research Council Laboratories, Carshalton, Surrey, Great Britain. **The effect of the neuronal excitant N-methyl-D-aspartate on the metabolism of mouse brain amino acids labelled from (14C)bicarbonate and L-(U-14C)aspartate.** Brain Research (Amsterdam). 43(1):227-234, 1972.

(14C)Bicarbonate and L-(U-14C)aspartate were injected intraventricularly into the brains of nembutalized albino mice, and the cerebral metabolism of each of these substrates compared with that occurring when the injection solution also contained the neuronal excitant, N-methyl-D-aspartate (NMDA). Over a 7-minute period, during which the distribution of radioactivity was measured at 1-minute intervals, NMDA caused an increased rate of loss of radioactivity newly incorporated into endogenous aspartate from (14C)bicarbonate. A commensurate increase in the labelling of either glutamate or glutamine was not detected. These results are taken to indicate heterogeneity of the systems responsible for the metabolism of the injected bicarbonate. The major system would appear to involve the predominant part of the glutamate and glutamine labelled from this precursor and to be unaffected by the neuronal excitation effected by NMDA.

This system may involve a substantial glial component. The minor system may be localized intraneuronally, and be associated with that particular aspartate pool, the turnover rate of which was shown previously, in (U-14C) glucose studies, to be greatly increased by the action of NMDA. Slight changes observed in the metabolism of L-(U-14C)aspartate in the presence and absence of NMDA, studied over a single 5-minute period, could be interpreted in a similar way, but the differences were not statistically significant. 13 references. (Author abstract)

**121966** Spira, Micha E.; Bennett, Michael V.L. Department of Zoology, Hebrew University, Jerusalem, Israel. **Penicillin induced seizure activity in the hatchet fish.** Brain Research (Amsterdam). 43(1):235-241, 1972.

The action of penicillin was explored in the Mauthner fiber - giant fiber synapse of the hatchet fish. This preparation presents the experimental advantages that both presynaptic and postsynaptic fibers can be penetrated by intracellular electrodes close to the synapses between them. No detectable effect was observed on transmission at the Mauthner fiber - giant fiber synapse. However, seizure activity is evoked by penicillin in this species as in other teleosts, presumably by action on neighboring susceptible structures. Characteristic epileptiform activity was observed in both Mauthner and giant fibers. The fish were curarized and perfused through the mouth with aerated physiological saline. Small droplets (1 microliter or less) of sodium penicillin G (25,000 to 50,000 units per milliliter) were applied to the floor of the fourth ventricle by means of a small pipette. Application of penicillin was followed by a small depolarization of 2 to 5 mV but there was little change in the propagated spike in the Mauthner fiber or in the spike in the giant fiber initiated by the Mauthner fiber. Two to 5 minutes after application of penicillin, both Mauthner and giant fibers showed long lasting (50 to 500 msec) depolarization varying in amplitude from 1 to 10 mV. The slow depolarizations in Mauthner and giant fibers were accompanied by activity of many other elements as indicated by the recording of burst discharges by the external electrode on the dorsal medulla. Withdrawal of the intracellular microelectrode to a just extracellular position showed the depolarizations to be associated with external negativity. It is concluded that penicillin causes epileptiform discharges that

are recorded as slow depolarizations in the Mauthner and giant fibers. These depolarizations may become prolonged and then appear to summate to form long lasting depolarizations. Neither form of depolarization is generated by the Mauthner giant fiber synapse. 22 references.

**121967** Curtis, D.R.; Game, C.J.A.; Johnston, G.A.R.; McCulloch, R.M.; MacIachlan, R.M. Department of Physiology, Australian National University, Canberra, Australia **Convulsive action of penicillin**. *Brain Research (Amsterdam)*. 43(1):242-245, 1972.

Results of a study of the action of electrophoretically administered penicillin upon the inhibition of spinal and cortical neurones by gamma-aminobutyric acid (GABA) and glycine are presented; and a comparison is made between the effects of penicillin and bicuculline, a known GABA antagonist, in regions of the central nervous system of the cat. Extracellular action potentials of single neurones were recorded by the center barrel of 7-barrel micropipettes, and active ions were administered electrophoretically from aqueous solutions within the other barrels: DL-homocysteate, glycine, GABA, bicuculline hydrochloride, and sodium benzyl penicillin. When administered with anionic currents of 40 to 120nA, penicillin reversibly reduced the inhibitory effect of GABA on the firing of spinal interneurons and Renshaw cells, without diminishing that of glycine to the same extent. When compared with bicuculline, penicillin was a weaker GABA antagonist. 11 references.

**121968** Burkhardt, Dwight A. Vision Laboratory, Department of Psychology, University of Minnesota, Minneapolis, MN 55455 **Effects of picrotoxin and strychnine upon electrical activity of the proximal retina**. *Brain Research (Amsterdam)*. 43(1):246-249, 1972.

Picrotoxin and strychnine were studied in the frog retina by examining their effects upon a sensitive and local light evoked extracellular potential, the proximal negative response (PNR). The PNR is a graded and predominately transient response of maximal amplitude near the inner border of the inner nuclear layer and is thought to reflect the activity of amacrine cells. The PNR was recorded with platinum iridium microelectrodes from the eyecup of *Rana pipiens*. Picrotoxin or strychnine sulfate was dissolved in frog Ringer solution. Solutions were applied topically

with a remotely controlled syringe which delivered one drop (0.02ml) into the eyecup. Responses of 34 retinas were evoked every 20 seconds by flashing a small spot of light on a background illumination which covered the entire retina. The PNR attains maximum amplitude 3 to 5 minutes after picrotoxin application. Thereafter, on - response amplitude begins to decline and its latency gradually increases. Picrotoxin has the apparent capacity to modify markedly mechanisms which control the suprathreshold amplitude of the PNR and the waveform without greatly affecting those which set its threshold sensitivity and effective intensity range. Strychnine, in 12 preparations, reliably and quickly increased the amplitude of the PNR, but the PNR waveform nevertheless remained quite transient. 19 references.

**122012** Samson, Herman H.; Lavine, Lawrence. Department of Psychology, Rutgers University, New Brunswick, NJ 08903 **Effects of pentobarbital on the visual evoked response in the avian optic tectum**. *Physiology & Behavior*. 8(6):1193-1196, 1972.

Pentobarbital sodium altered the effect of constant retinal illumination upon the photic evoked potential in the optic tectum of 5 White Carneaux pigeons. As the dose was increased, suppression by background illumination of the amplitude of the response decreased. With a dose level of 15mg/kg, constant retinal illumination (background) potentiated rather than suppressed the response amplitudes. 9 references. (Author abstract modified)

**122059** Di Giusto, E.L. School of Behavioral Sciences, Macquarie University, Sydney, Australia **Adrenaline or peripheral noradrenaline depletion and passive avoidance in the rat**. *Physiology & Behavior*. 8(6):1059-1062, 1972.

Adult male Wistar rats were randomly divided into four groups of 10. In an independent groups design, animals were administered either 3 intraperitoneal (ip) injections of 6-hydroxydopamine or of a vehicle solution. When administered ip, the drug specifically and extensively depletes peripheral noradrenaline from postganglionic, sympathetic nerve endings. In the remaining two groups, the adrenal medullae were surgically removed or a sham operation was carried out. All rats were consequently given one trial per day for 6 days on a step down passive avoidance task. It was found that the drug induced depletion of



peripheral noradrenaline, but not adrenaline depletion and significantly retarded the rate of acquisition of the response. The result was discussed in relation to recent empirical findings on the sympathetic nervous system during aversive conditioning. 19 references. (Author abstract)h

**122062** Fleming, Donovan E.; Rhodes, Leland E.; Wilson, Charles E.; Shearer, Donald E. Department of Psychology, Brigham Young University, Provo, UT 84601 Time-drug modulations of photically evoked after-discharge patterns. *Physiology & Behavior*. 8(6):1045-1049, 1972.

Photically evoked after discharge (AD) patterns of 10 albino rats were investigated using a short-term habituation procedure. Behavioral and/or electroencephalogram (EEG) activation was induced pharmacologically in order to examine the effects of arousal on AD parameters over time. It was found that pharmacological arousal generally suppressed the elicitation of AD. To determine whether or not AD suppression could be overridden, pentylenetetrazol (Metrazol) was used as an AD potentiator. It was observed that Metrazol enhanced the elicitation of AD with both control and drug treated animals. However, AD bursts following activating drug Metrazol treatments were irregular in form both in terms of spindle amplitude and in the number of spindles per burst. On the other hand, the effect of Metrazol injections following control substance injections was to regularize the number of spindles in an AD burst and to enhance spindle amplitude. These observations suggest that an enhancement of intrinsic thalamocortical synchronization by Metrazol did not fully override the effects of pharmacological neural activation. 13 references. (Author abstract)

**122077** Shaw, G.G. Department of Pharmacy, University of Nottingham, Nottingham NG7 2RD Great Britain Some pharmacological properties of the polyamines spermine and spermidine -- a reappraisal. *Archives Internationales de Pharmacodynamie et de Therapie* (Ghent). 198(1):36-48, 1972.

Rats and mice which had received injections of spermine or spermidine by the intraperitoneal route became sedated, hypothermic and hypomotile. These effects were accompanied by histamine release. The intravenous injection of these polyamines produced clonic convulsions,

respiratory arrest and death. The polyamines relaxed the rabbit duodenum preparation and exerted a nonspecific spasmolytic action on the guinea-pig ileum and rat uterus preparations. They selectively antagonized the contractions of guinea-pig ileum produced by nicotine. The polyamine failed to protect guinea-pigs against histamine aerosol shock. 21 references. (Author abstract)

**122081** Vogel, W.H.; Mahoney, K.; Hare, T.A. Jefferson Medical College, Thomas Jefferson University, Philadelphia, PA 19107 Inhibition of dopa decarboxylation by Ro4-4602, MK 485 and MK 486 in human liver homogenates. *Archives Internationales de Pharmacodynamie et de Therapie* (Ghent). 198(1):85-93, 1972.

Dopa can decarboxylate nonenzymatically and enzymatically. RO4-4602, MK 485 and MK 486 inhibited both the enzymatic decarboxylation of dopa in human liver preparations, and the nonenzymatic decarboxylation reaction in the absence of tissue. The inhibition in the presence and absence of tissue was reversed by the addition of  $\text{Cu}^{++}$ . Double reciprocal plots showed a competitive type of inhibition in both instances indicating that the inhibitors compete with dopa for the active site of the enzyme or, in the case of the nonenzymatic reaction, with a metal ion needed for the decarboxylation. The three inhibitors also inhibited the decarboxylation of 5-HTP but the shape of the inhibition curve and the concentrations which produced 50% inhibition were different from those for dopa for Ro4-4602 and MK 486. 19 references. (Author abstract)

**122091** Hackenberg, H.; Kriegstein, J. Pharmakologisches Institut der Universität Mainz, D-6500 Mainz, Obere Zahlbacher Str.67, Germany Comparative study on the inhibition of  $\text{Na}^+$ ,  $\text{K}^+$ -activated ATPase activity by chlorpromazine, promazine, imipramine, and their monodesmethyl metabolites. *Naunyn-Schmiedeberg's Archives of Pharmacology* (Berlin). 274(1):63-73, 1972.

The inhibition of the sodium activated and potassium activated adenosine triphosphatase ( $\text{Na-K-ATPase}$ ) activity by chlorpromazine, promazine, and imipramine was compared with that induced by the monodesmethyl metabolites of these drugs. The experiments were performed with a deoxycholate treated and sodium iodide treated microsomal enzyme preparation from rat brains. It was demonstrated in dose response curves as well as in double reciprocal



Lineweaver-Burk plots of Na-K-ATPase activity against potassium chloride concentration that the monodesmethyl metabolites were stronger inhibitors than their parent compounds. The results obtained with the desmethyl metabolites and imipramine as inhibitors indicate competitive inhibition, while the inhibition by chlorpromazine and promazine was of mixed type. The experimental data appear to support the following conclusions: the general rules of albumin binding of drugs can apply to a drug - enzyme complex; and the monodesmethyl metabolites of tricyclic psychoactive drugs may possess a higher affinity to receptors with protein structure. 31 references. (Author abstract modified)

**122096** Jacobson, M.; Lu, A.Y.H.; Sernatiner, E.; West, S.; Kuntzman, R. Department of Biochemistry and Drug Metabolism, Hoffmann-La Roche Inc., Nutley, NJ 07110 The effect of altering liver microsomal co-binding hemoprotein composition on pentobarbital-induced anesthesia. *Chemico-Biological Interactions* (Amsterdam). 5(3):183-189, 1972.

A study was undertaken in which the effects of cytochrome P-450 and cytochrome P-448 on the rate of pentobarbital oxidation in the reconstituted rat liver microsomal system were compared. It was found that the administration of 30mg/kg of pentobarbital does not cause hypnosis in rats pretreated with phenobarbital (PB). In contrast, rats pretreated with 3-methylcholanthrene (3-MC) sleep 32% longer than untreated rats following treatment with pentobarbital. When untreated and 3-MC treated rats awaken, identical brain levels of unmetabolized pentobarbital are found suggesting that the prolongation of anesthesia caused by 3-MC is due to a slowing of the rate of pentobarbital metabolism rather than to a change in barbiturate sensitivity. The levels of the liver microsomal cytochromes P-450 and P-448 are markedly increased in rats pretreated with phenobarbital and 3-MC, respectively. In the reconstituted liver microsomal hydroxylation system, the rate of pentobarbital oxidation is greater in the presence of cytochrome P-450 than in the presence of cytochrome P-448. This may, in part, explain the inhibitory effect of 3-MC on pentobarbital metabolism *in vivo*. 28 references. (Author abstract modified)

**122097** Kupfer, David; Jansson, Ingela; Orrenius, Sten. Worcester Foundation for Experi-

mental Biology, Shrewsbury, MA 01545 Spectral interactions of marihuana constituents (cannabinoids) with rat liver microsomal monooxygenase system. *Chemico-Biological Interactions* (Amsterdam). 5(3):201-206, 1972.

An investigation was undertaken in which the spectral interactions of various cannabinoids with rat liver microsomes were studied. Delta1-tetrahydrocannabinol (delta1-THC), delta6-THC, and cannabinol (CBN) produced type I spectral changes, indicating the formation of an enzyme - substrate complex with cytochrome P-450. The binding affinities of these compounds for cytochrome P-450, as determined by their spectral dissociation constants (Ks), were found to be 17.7microM, 13.0microM, and 11.9microM, respectively. 7-Hydroxy-delta6-THC, which is a metabolite of delta6-THC, did not produce spectral changes with rat liver microsomes, suggesting that it is not a substrate for further oxidation by cytochrome P-450. Evidence was obtained that delta1-THC, delta6-THC, and CBN, as well as hexobarbital, bind to the same cytochrome P-450 species. Finally, it is suggested that the previously reported failure of hexobarbital to inhibit delta1-THC hydroxylation may be ascribed to substantial differences in the binding affinity for cytochrome P-450 by the two substances. 15 references. (Author abstract)

**122148** Sansonetti, Craig J.; Reilly, Hugh T. Army Land Warfare Lab, Aberdeen Proving Ground, Aberdeen, MD Drug identification, properties and characteristics: narcotics, stimulants, depressants, marijuana and hallucinogens. Springfield, Va., NTIS, AD-741338, 1972, 250p.PC:\$6.75 MF:95 cents.

A general survey of the literature regarding drug abuse and drug identification has been conducted. Illicit drugs in five categories -- narcotics, stimulants, depressants, marihuana, and hallucinogens -- are listed and described. In each category the history of the drug type, its clinical use, and the physical and psychological effects of its abuse are discussed. Analytical data such as melting point, solubility, color and microcrystal tests, chromatography data, and spectra are provided for approximately 125 individual drugs. General analytical techniques both for pharmaceutical preparations and for drugs in body fluids are briefly summarized. Numerous references are provided for additional data. (Author abstract)

122165 Tyce, Gertrude M.; Sharpless, Nansie S.; Owen, Charles A., Jr. Mayo Clinic and Mayo Foundation, Rochester, MN Isolation of metabolites of L-dopa--a possible source of error. *Biochemical Pharmacology* (Oxford). 21(17):2409-2412, 1972.

A combination of ion exchange and adsorption chromatography is frequently used for the isolation of 3,4-dihydroxyphenylalanine (dopa) and its metabolites. The method involves adjusting a protein free extract to pH 2 and passing it through a strong cation exchange resin (Dowex-50); amino acids and amines are retained by the resin. The amino acids are eluted with a neutral buffer, and then the amines are eluted with a strong acid. Deaminated acidic and neutral compounds and glucuronides and sulfates of other metabolites are considered not to be retained by the resin and to be present in the effluent. In all fractions, catechols can be separated from noncatechols by adsorption of the former on alumina. Evidence is presented, however, that when the method was used to separate the metabolites of L-dopa-14C in a perfused rat liver system, the glucuronides of the amines, 3,4-dihydroxyphenylethylamine (dopamine) and 3-methoxy-4-hydroxyphenylethylamine (3-O-methyldopamine), were retained by Dowex-50 in this separation and are eluted by the natural buffer. These amine glucuronides are not catechols; therefore, they both subsequently appeared in the effluent during the alumina separation of the amino acids, and they thus contributed to a fraction normally considered to consist only of 3-methoxy-4-hydroxyphenylalanine (3-O-methyldopa). 13 references.

122167 Bartosek, I.; Guaitani, A.; Donelli, M.G. Istituto di Ricerche Farmacologiche, 'Mario Negri' Via Eritrea, 62-20157 Milano, Italy Prolonged metabolism of pentobarbital in isolated perfused liver of tumor bearing rats. *Biochemical Pharmacology* (Oxford). 21(17):2359-2362, 1972.

The rate of disappearance of pentobarbital from the perfusion medium was followed during the perfusion of livers isolated from normal and Walker 256 tumor bearing rats. The male Sprague-Dawley rats had been given a single 25mg/kg dose of pentobarbital. The half life of pentobarbital found in tumor liver perfused with tumor blood was 10 times higher (323 minutes) than that of the drug in normal rat liver. The cross experiments, in which normal liver was perfused with tumor blood and vice versa, demonstrated that the blood

of tumor bearing animals decreases the rate of pentobarbital metabolism by liver tissue. 12 references. (Author abstract modified)

122168 Thoa, Nguyen B.; Weise, Virginia K.; Kopin, Irwin J. Laboratory of Clinical Science, National Institute of Mental Health, Bethesda, MD 20014 Effect of L-dihydroxyphenylalanine on methylation of 3H-norepinephrine and 3H-histamine. *Biochemical Pharmacology* (Oxford). 21(17):2345-2350, 1972.

The acute administration of L-dihydroxyphenylalanine (L-dopa) to male NIH mice produced a dose dependent decrease in the O-methylation of 3H-norepinephrine. It was maximal 35 minutes following the L-dopa treatment and was still apparent for up to 2 hours. It was not reversed by the concomitant administration of methionine and, presumably, occurred as a consequence of the competitive inhibition of the O-methylation of norepinephrine by the L-dopa. The formation of N-methylhistamine from histamine was also partly inhibited by L-dopa. This effect was short in duration, terminating within 1 hour. It was partially reversed by methionine but not by leucine. The amount of unchanged 3H-norepinephrine was the same in both the control and L-dopa treated mice, whereas the retention of 3H-histamine was significantly higher in the L-dopa treated animals than in the controls. It is concluded that depletion of the methyl donor, S-adenosylmethionine, was responsible for the decrease in the rate of methylation of administered histamine following the acute administration of L-dopa. However, it appears that competitive inhibition of the methylation of norepinephrine is responsible for the decrease in the methylation of that substance following the administration of L-dopa. 9 references. (Author abstract modified)

122169 Christensen, Flemming. The Royal Dental College, Department of Biochemistry, Vennelyst Boulevard, 8000 Arhus C, DK, Denmark Metabolism of dicoumarol by liver microsomes from untreated and phenobarbital treated rats. *Biochemical Pharmacology* (Oxford). 21(17):2303-2311, 1972.

The metabolism of dicoumarol by white male rat liver microsomes from untreated and phenobarbital treated rats was studied. Following differential centrifugation of untreated rat liver homogenates, the total quantities of which showed a distinct dicoumarol metabolizing activi-

ty, it was found that only the 104000g microsomal fraction strongly supported dicoumarol metabolism. This activity was found to be strongly dependent on the presence of NADPH or a NADPH generating system as well as oxygen, and it was inhibited by carbon monoxide. These data indicate that dicoumarol is metabolized by the mixed function oxidase of liver microsomes. The  $K_m$  and  $V_m$  for dicoumarol were determined using microsomes from untreated and phenobarbital treated rats. The  $K_m$  values were 0.00005 and 0.000039M, respectively, while the corresponding  $V_m$  values were 0.9 and 2.3 nmoles/mg protein/min respectively. These results indicate that the enzyme responsible for dicoumarol metabolism is qualitatively unchanged following induction with phenobarbital, although the amount of active enzyme per unit of microsomal protein increased following the phenobarbital treatment. 19 references. (Author abstract modified)

**122170** Hyypä, Markku T.; Wurtman, Richard J. Department of Neurology, University of Turku, SF-20520 Turku 52, Finland Time-dependent changes in brain 3H-norepinephrine disappearance caused by L-dopa administration. *Life Sciences* (Oxford). 11(15):713-721, 1972.

The effect of L-dopa on the disappearance of brain 3H-norepinephrine (3H-NE) depends on the time that elapses between the intracisternal administration of 3H-NE and the subsequent injection of L-dopa. Male Sprague-Dawley rats received L-dopa (100mg/kg, i.p.) 5 minutes after they were given 3H-NE and were killed an hour later; the disappearance of 3H-NE from the brain was markedly accelerated. In rats given L-dopa 4 hours after the 3H-NE and killed an hour later, there was no acceleration in the disappearance of the 3H-NE. These observations suggest that brain norepinephrine exists in several metabolic compartments, an easily releasable pool with which the intracisternal 3H-NE initially mixes, and which is liberated by L-dopa, and another pool or pools with which 3H-NE subsequently mixes, and which are not liberated by L-dopa. 11 references. (Author abstract modified)

**122177** Lorenzo, A.V.; Shirahige, I.; Liang, M.; Barlow, C.F. Children's Hospital Medical Center, Neurology Research, 300 Longwood Avenue, Boston, MA 02115 Temporary alteration of cerebrovascular permeability to plasma protein during drug-induced seizures. *American Journal of Physiology*. 223(2):268-277, 1972.

Regional increases in the penetration of albumin-125I into the brain were observed in paralyzed, artificially respired mongrel cats, convulsed for 5, 15, 30, and 60 minutes with pentylenetetrazol. In the thalamus, the increase was directly proportional to the duration of the seizure and did not appear to be dependent on blood flow or vasodilatation but to an enhanced vascular permeability. A cholinergic mechanism may be implicated as pretreatment with methantheline, a cholinergic antagonist, significantly reduced the permeability change. The alteration in vascular permeability was reversible, as indicated by the rapid decline in thalamic albumin-125I activity minutes after seizure arrest. While the metabolic degradation of albumin-125I in the brain accounted for an appreciable portion of the decline, the evidence suggested that a significant amount of the albumin-125I returned to the blood. 46 references. (Author abstract modified)

**122179** Kelleher, R.T.; Morse, W.H.; Herd, J. Alan. Department of Psychiatry, Harvard Medical School, 25 Shattuck Street, Boston, MA 02115 Effects of propranolol, phentolamine and methyl atropine on cardiovascular function in the squirrel monkey during behavioral experiments. *Journal of Pharmacology and Experimental Therapeutics*. 182(2):204-217, 1972.

Systemic mean arterial blood pressure and heart rate were measured in squirrel monkeys trained under a fixed ratio schedule to press a key that turned off a light associated with the delivery of electric shocks. The mean blood pressures were above values previously recorded in untrained squirrel monkeys. Episodic increases in blood pressure and heart rate were commonly associated with schedule controlled key pressing behavior. Phentolamine decreased blood pressure and increased heart rate. The episodic increases in blood pressure persisted even when phentolamine markedly lowered blood pressure. There was little change in blood pressure after propranolol, which markedly decreased heart rate, or after methyl atropine, which increased heart rate. After either drug, the episodic increases in blood pressure persisted. None of these drugs consistently affected key pressing behavior over the range of doses that markedly affected blood pressure or heart rate. Atropine, which had cardiovascular effects similar to methyl atropine, decreased rates of key pressing. Combinations of propranolol and methyl atropine had effects similar to propranolol alone; these findings suggest that, in the squirrel mon-



key, a relatively high degree of sympathetic nervous system tone persists during behavioral experiments. 28 references. (Author abstract)

**122181** Gillis, Richard A.; Dionne, R.A.; Standaert, Frank G. Department of Pharmacology, Georgetown University, School of Medicine, 3900 Reservoir Road, Washington, DC 20007 **Suppression by clonidine (St-155) of cardiac arrhythmias induced by digitalis.** *Journal of Pharmacology and Experimental Therapeutics*. 182(2):218-226, 1972.

The reported effectiveness of clonidine in depressing sympathetic cardiac nerves prompted an investigation into whether this agent would counteract cardiac arrhythmias induced by digitalis. This was accomplished by administering clonidine to Dial-urethane-anesthetized cats in which arrhythmias had been induced by deslanoside and in which the following functions were monitored: electrocardiogram; femoral arterial blood pressure; right ventricular contractile force; and spontaneous electrical activity in the preganglionic sympathetic nerve fibers. Clonidine in a dose ranged of 18.1 to 60.2 mg/kg was found to convert an established ventricular tachycardia to a regular sinus rhythm while simultaneously depressing the increased sympathetic nerve firing induced by deslanoside. Clonidine was relatively ineffective against similar arrhythmias produced in spinal sectioned cats. Pretreatment with 6.35 mg/kg of clonidine significantly increased the doses of deslanoside necessary to produce ventricular tachycardia and ventricular fibrillation. Although depression of cardiac force, blood pressure, and heart rate occurred with clonidine administration, these effects were not detrimental to the animals in the doses required for prophylaxis and treatment of the arrhythmias. These results support the hypotheses that agents which depress sympathetic nerve firing have the capacity to antagonize digitalis induced cardiac arrhythmias and that effective antidigitalis materials may be found by screening agents which are neurodepressant to the sympathetic nervous system. 32 references. (Author abstract)

**122182** Ross, Svante B.; Akerman, S. Bengt A. Research and Development Laboratories, Astra Lakemedel AB, S-15185 Sodertalje, Sweden **Cyclization of three N-omega-haloalkyl-N-methylaminoaceto-2,6-xylylide derivatives in relation to their local anesthetic effect in vitro and in vivo.** *Journal of Pharmacology and Experimental Therapeutics*. 182(2):351-361, 1972.

The sciatic nerve of guinea pigs in vivo and frogs in vitro were used as model systems for studies on the cyclization of N-4'-chlorobutyl (RAD 140), N-5'-chloropentyl (RAD 150), and N-5'-bromopentyl (RAD 154) derivatives of N-methylaminoaceto-2,6-xylylide to the corresponding quaternary ammonium compounds. The relationship between the local anesthetic effect and the formation of the quaternary derivatives was examined. The half life period ( $T_{1/2}$ ) for the cyclization at pH 7.4 was about 20 seconds for RAD 140, 1 minute for RAD 154, and 40 minutes for RAD 150. The level of the quaternary derivatives formed in the nerves was highest for RAD 154 and somewhat less for RAD 140 and RAD 150. In contrast to the tertiary amines, the quaternary derivatives disappeared very slowly from the nerves in vivo as well as in vitro. The disappearance was biphasic; initially a small amount disappeared rapidly followed by a second phase with a very slow rate. The  $T_{1/2}$  of the latter phase in vivo was about 4 days for the piperidinium compound (RAD 179) formed from RAD 150 and RAD 154. In vitro, the  $T_{1/2}$  values were 23 hours for RAD 179 when formed from RAD 150 and RAD 154 and 36 hours for the pyrrolidinium compound formed from RAD 140. The main part of RAD 179 which was taken up in the nerves by incubation with this compound disappeared from the nerves much more rapidly than when RAD 179 was formed from RAD 150 or RAD 154 in the nerves. The sustained local anesthetic effect on the sciatic nerve in guinea pigs in vivo produced by RAD 150 and RAD 154 was well correlated to the level of RAD 179 in the nerves, whereas the haloalkylamines disappeared long before the anesthesia wore off. This relationship was not so well established in the in vitro experiments, but the results obtained indicate that the cyclized products contributed to the long duration of the conduction block. 21 references. (Author abstract)

**122204** Tsubokawa, Takashi; Sutin, Jerome. Department of Neurological Surgery, School of Medicine, Nihon University, Itabashi-Ku, Tokyo, Japan **Pallidal and tegmental inhibition of oscillatory slow waves and unit activity in the subthalamic nucleus.** *Brain Research (Amsterdam)*. 41(1):101-118, 1972.

Barbiturate anesthesia produced a slowing in the mean spontaneous discharge rate of cells in both the cat subthalamic area and subthalamic nucleus and also increased the regularity of firing in the latter region. Tremor of hind limbs, slow



waves, and single cell activity were all suppressed by pallidal stimulation during anesthesia, suggesting that this electrical activity is related to postural tremor or shivering. Ventral tegmental area stimulation also inhibited subthalamic nucleus slow waves and unitary discharges but differed from pallidal stimulation in several respects: it produced a short latency driven action potential before inhibition, evoked a focal potential in the subthalamic nucleus, and led to postinhibitory rhythmic firing of subthalamic nucleus cells. In locally anesthetized animals, pallidal and tegmental stimulation both resulted in driven action potentials and brief inhibition of firing rates. In anesthetized and unanesthetized animals, many subthalamic area cells responded to sciatic nerve stimulation with a driven action potential without subsequent suppression of firing. It is suggested that both excitatory and inhibitory paths from the globus pallidus project on the subthalamic nucleus, and that barbiturates preferentially block the excitatory pathway. Cells that respond to tegmental stimulation with a shorter latency may be activated by a pallido - tegmental subthalamic path, rather than by pallidal - subthalamic projections. 51 references.

**122221 Axelrod, J.** Laboratory of Clinical Science, National Institute of Mental Health, Bethesda, MD **Dopamine-beta-hydroxylase: regulation of its synthesis and release from nerve terminals.** *Pharmacological Reviews*. 24(2):233-243, 1972.

An assay using either phenylethylamine or tyramine as a substrate and based on the sequential conversion of the beta-hydroxylated product formed by dopamine-beta-hydroxylase (DBH) to a radioactively labeled N-methylated derivative was applied to the measurement of DBH activity in rats. Administration of reserpine caused an increase in DBH in sympathetic ganglia (stellate) and nerve terminals in the heart and adrenal glands. The reserpine induced increase in DBH in the stellate ganglia was blocked by cycloheximide, a protein synthesis inhibitor, indicating that the increase in enzyme activity depends on continuing protein synthesis and is a transsynaptic event. Hypophysectomy decreased adrenal DBH and, as did denervation, partially prevented stress induced DBH elevation in the adrenals. Administration of adrenocorticotrophic hormone to hypophysectomized rats for 10 days restored enzyme levels to normal. Thus adrenal DBH is

under both neuronal and hormonal control. Dopamine-beta-hydroxylase and noradrenaline are released by a process of exocytosis. Release of the neurotransmitter and enzyme is enhanced by phenoxybenzamine and calcium and blocked by prostaglandins, colchicine, and cytocholasin B. Serum DBH arises mainly from sympathetic nerve terminals. It is reduced in familial dysautonomia and elevated by stress and hypophysectomy. 62 references.

**122222 Pletscher, Alfred.** Research Department, F.Hoffmann - La Roche and Co., Ltd, Basel, Switzerland **Induction or reduction of catecholamine enzymes: regulation of catecholamine turnover by variations of enzyme levels.** *Pharmacological Reviews*. 24(2):225-232, 1972.

Fluctuations in levels of catecholamine enzymes may be responsible for the long-term regulatory mechanisms of catecholamine turnover. Factors leading to variations in the enzyme levels are hormones, neuronal influence, L-dopa, nerve growth, brain 6-hydroxydopamine, and tyrosine aminotransferase. These factors differ in their importance from enzyme to enzyme. Hormonal influences probably predominate in the regulation of phenylethanolamine-N-methyl-transferase, whereas in the case of tyrosine hydroxylase, neuronal impulses are more important. Dopamine-Beta-hydroxylase seems to be controlled by both these factors to a similar extent. Prolonged administration of high doses of L-dopa to rats leads to diminished TH activity in the adrenals; L-Dopa also prevents the reserpine induced rise in adrenal TH. The fact that neuronal impulses may change the macromolecular composition of the postganglionic neuron is also of interest with respect to the retention of information in the central nervous system and the development of drug tolerance not related to drug metabolizing enzymes. 46 references.

**122225 Sachs, Charlotte; Jonsson, Gosta.** Department of Histology, Karolinska Institutet, S-104 01 Stockholm, Sweden **Degeneration of central noradrenaline neurons after 6-hydroxydopamine in newborn animals.** *Research Communications in Chemical Pathology and Pharmacology*. 4(1):203-220, 1972.

The effect of 6-OH-DA (3 x 100mg/kg s.c.) administered to newborn Sprague-Dawley rats and N.M.R.I. mice on the 3H-amine uptake in

vitro and endogenous noradrenaline (NA) in central and peripheral monoamine neurons has been investigated. It was confirmed that 6-OH-DA given to newborn animals produced a permanent sympathectomy, although not complete. 6-OH-DA was shown to cause a considerable and long lasting reduction in the endogenous NA and 3H-NA uptake in all brain regions investigated, with more marked effects in the cerebral cortex and spinal cord as compared with the hypothalamus. Only minute effects were observed on the uptake of 3H-DA by the caudate nucleus and the uptake of 3H-5-Ht by the cerebral cortex. The results obtained strongly support the view that 6-OH-DA can penetrate the blood brain barrier in newborn animals and cause a selective degeneration of central NA neurons. Furthermore, the NA neurons in the cerebral cortex and spinal cord seem to be more susceptible to 6-OH-DA than are those in the hypothalamus. 36 references. (Author abstract modified)

**122229** Bonagura, Vincent; Cassebaum, Lucy; Dangman, Kenneth; Freund, John; Cabbat, Felicitas; Dembiec, Dorothy; Heikkila, Richard; Cohen, Gerald. Departments of Biochemistry and Neurology, College of Physicians and Surgeons of Columbia University, New York, NY 10032 **Protection by desipramine of 6-hydroxydopamine induced damage to adrenergic nerve terminals in mouse heart.** Research Communications in Chemical Pathology and Pharmacology. 4(1):163-171, 1972.

Heart slices showed diminished uptake of H3-norepinephrine 72 hours after the intraperitoneal injection of 6-hydroxydopamine (100mg/kg) into male Swiss-Webster mice. The uptake was normal, however, when desipramine (25mg/kg) was injected 30 minutes prior to the 6-hydroxydopamine. Diminished uptake of H3-norepinephrine was the result of the destruction of the adrenergic nerve terminals in the heart. Desipramine, an inhibitor of the axonal transport of catecholamines, was used to prevent the accumulation of 6-hydroxydopamine to nerve endings in vivo. These results, and those of others who used different experimental models, show that the accumulation of 6-hydroxydopamine is necessary for the destruction of adrenergic nerve terminals. The uptake of H3-norepinephrine in vitro by heart slices serves as a useful indicator of denervation. 17 references. (Author abstract modified)

**122230** Silberman, Allan; Yu, Chuan-Tao; Lam, Kwok-Wai. Department of Biochemistry, School of Medicine, Boston University, Boston, MA 02118 **Alleviation of barbiturate inhibition on the oxidative activity of submitochondrial particles by alkali.** Research Communications in Chemical Pathology and Pharmacology. 4(1):115-119, 1972.

The inhibition of oxidative phosphorylation by barbiturate compounds is pH dependent. Optimal inhibition is observed at pH values below the pKa of the barbiturate employed. This result suggests that the unionized form of the drug, i.e., the form having the oxygen atom at position 2 of the barbituric ring existing in the keto form as opposed to the enolate form, is responsible for the inhibitory effect on mitochondrial oxidative phosphorylation. 9 references. (Author abstract)

**122232** Caputi, Achille P.; Marmo, Emilio; Saini, Ravinder K. Department of Pharmacology, University of Naples, Naples, Italy **Pharmacology of a new beta-adrenoceptor blocking agent, the 15219.** Research Communications in Chemical Pathology and Pharmacology. 4(1):25-35, 1972.

The beta-adrenoceptor blocking activity of the compound 15219 (DL-3-hydroxy-6-methyl-3,4-dihydro-1,5-benzoxazocine) was determined by utilizing various in vivo and in vitro techniques. The in vitro experiments were conducted on the isolated guinea pig heart, the isolated rabbit and rat duodenum, and the isolated rat gravid uterus; the in vivo experiments were performed on the carotid arterial pressure of cats and rats anaesthetized by ethylurethane. The 15219 was found to be less potent than propranolol and USVC 6524 and did not present any significant antiarrhythmic activity. 6 references. (Author abstract modified)

**122235** Chang, Tsun; Okerholm, R.A.; Glazko, A.J. Department of Pharmacology, Division of Research and Development, Parke, Davis and Company, Ann Arbor, MI 48106 **A 3-O-methylated catechol metabolite of diphenylhydantoin (dilantin) in rat urine.** Research Communications in Chemical Pathology and Pharmacology. 4(1):13-23, 1972.

Using carbon-14 labeled diphenylhydantoin and gas chromatography mass spectrometry, a 3-O-methylated catechol metabolite has been identified in rat urine as 5-(4-hydroxy-3-methoxyphenyl)-5-phenylhydantoin. The recently

identified 3,4-dihydroxyphenyl (catechol) metabolite of diphenylhydantoin also undergoes 3-O-methylation when administered to rats. The new metabolite represents about 10% of the total drug excreted in the urine of rats receiving diphenylhydantoin in the diet over a period of several weeks. 15 references. (Author abstract)

**122236** Delphia, John M.; Singh, Shamer. Department of Anatomy, The Ohio State University, College of Medicine, Columbus, OH 43210 **Effect of maternally injected sodium pentobarbital during the embryonic period of gestation on liver glycogen levels in the rat fetus.** *Research Communications in Chemical Pathology and Pharmacology.* 4(1):7-12, 1972.

The effect of maternal intraperitoneal administration of a single dosage of sodium pentobarbital (22mg/kg) to pregnant albino rats during the ninth, tenth, or fifteenth day of gestation on fetal liver glycogen levels has been investigated. Administration of the above dosage of the barbiturate on either the ninth, tenth, or fifteenth day of gestation results in lowered liver glycogen in the fetus during the sixteenth day of gestation. The same dosage administered on the tenth or fifteenth day of gestation lowers the fetal liver glycogen during the twentieth day of gestation. 9 references. (Author abstract modified)

**122237** Blank, C.L.; Kissinger, P.T.; Adams, R.N. Department of Chemistry, University of Kansas, Lawrence, KS 66044 **5,6-Dihydroxyindole formation from oxidized 6-hydroxydopamine.** *European Journal of Pharmacology (Amsterdam).* 19(3):391-394, 1972.

Recent experiments revealed that, within 1 hour, oxidized 6-hydroxydopamine (6-OHDA) solutions at 37 degrees C and pH 7.4 produce significant quantities of 5,6-dihydroxyindole (5,6-DHI). 6-Aminodopamine, an analog of 6-OHDA, is a powerful norepinephrine depletor in the mouse brain and provides the same 5,6-hydroxyindoles under the same conditions. It is concluded that 5,6-DHI may be the effectual agent in the pharmacological action of 6-OHDA. 12 references. (Author abstract modified)

**122239** Takagi, Keihiro; Takayanagi, Issei; Liao, Chung Shin. Department of Chemical Pharmacology, Faculty of Pharmaceutical Sciences, University of Tokyo, Bunkyo-ku, Tokyo, Japan **The effect of calcium and magnesium ions on drug-**

**receptor interactions.** *European Journal of Pharmacology (Amsterdam).* 19(3):330-342, 1972.

The effects of calcium and magnesium on drug receptor interactions were examined using the taenia of the guinea pig and the rat vas deferens. The agonists butyltrimethylammonium, histamine, and noradrenaline protected their receptors from the blocking effects of the beta-chloroethylamines in normal Locke-Ringer solution, calcium free Locke-Ringer solution, and magnesium free Locke-Ringer solution, but not in Locke-Ringer solution which was free of both calcium and magnesium. On the other hand, the competitive antagonists benactyzine methobromide and diphenhydramine protected their receptors from the blocking effects of the beta-chloroethylamines in all forms of the Locke-Ringer solution studied. These results indicate that calcium and magnesium ions are involved in the combination of agonists with their receptors, but that they are not involved in the combination of the competitive antagonists and beta-chloroethylamines with their receptors. Magnesium ions may be substituted for calcium ions in the agonist receptor interactions. 13 references. (Author abstract)

**122241** Gibaldi, M.; Feldman, S. Department of Pharmaceutics, School of Pharmacy, State University of New York at Buffalo, Buffalo, NY **Route of administration and drug metabolism.** *European Journal of Pharmacology (Amsterdam).* 19(3):323-329, 1972.

The differences between first pass and conventional pharmacokinetic models, which are used to describe the time course of drugs and/or metabolites in the body and excreta, are studied. The basis for the first pass model is that at least part of elimination is assumed to occur from a compartment distinct from that containing the vascular sampling site, and this compartment (which is analogous to the hepatoportal system) receives the drug upon direct or indirect portal vein administration. Conventional models, on the other hand are based on the assumptions that the compartmental system is a linear one and drug elimination occurs exclusively from the compartment containing the plasma. In contrast to the conventional models, which indicate that drug metabolism is independent of the route of administration, the first pass model has shown that the following parameters are highly dependent on the route of administration: the time course and actual levels of drug and metabolites in the tissue;



the ratio of drug to metabolite; the percentage of the absorbed drug which is excreted unchanged in the urine; and the composition of total metabolites in the urine. Like the conventional models, the first pass model indicates that, when the drug undergoes linear biotransformation, the ultimate composition of total metabolites in the urine is independent of the route of administration. The results obtained with the first pass model were substantiated for the following drugs in living systems: imipramine, guanethidine, pentazocine, chlorpheniramine, progesterone, and chlorpromazine. 13 references.

**122243** Samanin, R.; Ghezzi, D.; Valzelli, L.; Garattini, S. Istituto di Ricerche Farmacologiche 'Mario Negri,' Via Eritrea 62, 20157 Milan, Italy **The effects of selective lesioning of brain serotonin or catecholamine containing neurones on the anorectic activity of fenfluramine and amphetamine.** *European Journal of Pharmacology* (Amsterdam). 19(3):318-322, 1972.

The effects of fenfluramine and amphetamine on food intake were studied in midbrain raphe lesioned and 6-hydroxydopamine treated female Charles River rats. It was found that lesions of the midbrain raphe, which lower the forebrain serotonin concentrations, antagonized the anorectic effect of fenfluramine but did not modify the action of amphetamine. Intraventricular injections of 6-hydroxydopamine, which produce a marked decrease in the brain noradrenaline and dopamine levels, did not affect the actions of either amphetamine or fenfluramine. It is concluded that the anorectic effect of fenfluramine, but not that of amphetamine, might be due to a release of brain serotonin. It is also postulated that the anorexia induced by amphetamine could be due to a release of dopamine from the dopaminergic nerve terminals. 29 references. (Author abstract modified)

**122244** Witschi, Hanspeter; Saint-Francois, Bernard. Department of Pharmacology, Faculty of Medicine, University of Montreal, Montreal, Canada **Enhanced activity of benzpyrene hydroxylase in rat liver and lung after acute cannabis administration.** *Toxicology and Applied Pharmacology*. 23(1):165-168, 1972.

As part of an investigation into whether or not marihuana would interfere with the induction of microsomal enzymes in the liver and lung, male Wistar rats were given 30 to 500mg/kg p.o. of a

crude Cannabis resin. Twenty four hours later, the activities of benzpyrene hydroxylase in the lungs and livers of the animals were found to be enhanced in a dose dependent manner. When 80 and 280mg/kg of pure delta9-tetrahydrocannabinol (delta9-THC) were given to rats, the enhanced benzpyrene hydroxylase activity was observed only in the lungs, whereas 280mg/kg of pure delta8-THC enhanced the activity of this enzyme only in the liver. 13 references. (Author abstract modified)

**122245** Datta, R.K.; Antopol, W. Division of Laboratories, Beth Israel Medical Center, New York, NY 10003 **Inhibitory effects of chronic administration of morphine on uridine and thymidine incorporating abilities of mouse liver and brain subcellular fractions.** *Toxicology and Applied Pharmacology*. 23(1):75-81, 1972.

Attempts have been made to examine the in vitro and in vivo effects of morphine sulfate on the incorporation of <sup>14</sup>C-labeled uridine and thymidine into acid insoluble fractions of the mouse liver and brain. Morphine, in vitro or following administration in vivo, produced no significant changes in the uridine and thymidine incorporating abilities of liver and brain homogenates prepared from male C57BL mice. The chronic administration of morphine produced dose dependent decreases in the uridine and thymidine incorporating abilities of the liver and brain homogenates and their subcellular fractions, including nuclei, mitochondria, and microsomes. 12 references. (Author abstract modified)

**122247** Fuller, George C.; Bousquet, William F.; Miya, Tom S. Department of Pharmacology and Toxicology, College of Pharmacy, University of Rhode Island, Kingston, RI **Effect of cold exposure on drug action and hepatic drug metabolism in the rat.** *Toxicology and Applied Pharmacology*. 23(1):10-19, 1972.

The relationship between environmental temperature and hepatic oxidative drug metabolism was studied in male Holtzman rats. It was found that exposure of the rats to a temperature of 4 degrees C for 4 days decreased the sleeping time response of the animals to hexobarbital and meprobamate, but not to barbital. The plasma concentrations of these drugs at the time that the righting reflex was regained were lower in the cold exposed rats, indicating that the observed decrease in sleeping time was not due to a



decreased central nervous system sensitivity to these agents. The onset time of hexobarbital, meprobamate, and barbital hypnosis was similar in cold exposed and control rats, suggesting that altered drug absorption was not responsible for the observed differences in the duration of the drug response. The decline in the brain and plasma concentrations of zoxazolamine was more rapid in the cold exposed animals, and the metabolism of hexobarbital and aminopyrine was significantly elevated in the isolated perfused livers from these rats. The hepatic microsomal N-demethylase activity, hexobarbital and meprobamate oxidation, CO-binding pigment, and NADPH-cytochrome c reductase activity were increased in the cold exposed animals. Experiments with 2-<sup>14</sup>C-glycine indicated that in the vivo incorporation of this isotope into the hepatic microsomes was increased significantly in the cold exposed rats. These results indicate that cold exposure stimulated hepatic drug metabolism and suggest that this stimulation is mediated via an accelerated synthesis of the hepatic drug metabolizing system. 28 references. (Author abstract modified)

**122284** Sasame, H.A.; Perez-Cruet, J.; Di Chiara, G.; Tagliamonte, A.; Tagliamonte, P.; Gessa, G.L. Laboratory of Chemical Pharmacology, National Heart and Lung Institute, National Institutes of Health, Bethesda, MD 20014 **Evidence that methadone blocks dopamine receptors in the brain.** *Journal of Neurochemistry* (Oxford). 19(8):1953-1957, 1972.

A study was undertaken to investigate the influence of methadone on brain monoamine metabolism in male Wistar rats. It was found that D,L-methadone shares with the phenothiazine and butyrophenone neuroleptics several pharmacological and biochemical actions: it induces catalepsy and hypothermia, blocks apomorphine induced gnawing, increases brain homovanillic acid levels, and stimulates brain dopamine synthesis. The dextro isomer of methadone is inactive, and alpha-methyl-tyrosine was found to potentiate methadone induced catalepsy, while apomorphine reverses it. The data suggest that methadone, like the butyrophenone and phenothiazine neuroleptics, blocks dopamine receptors in the brain. 21 references. (Author abstract modified)

**122357** Somerville, A.R.; Smith, Alice A. I.C.I.Ltd., Pharmaceuticals Division, Alderley

Park, Macclesfield, Cheshire, SK10 4TG, England **The effects of propranolol and electrical stimulation on the cyclic 3',5'-AMP content of isolated cerebral tissue.** *Journal of Neurochemistry* (Oxford). 19(8):2003-2006, 1972.

An attempt to study and compare the blocking effects of theophylline, propranolol, procaine, and practolol on electrically and adenosine induced increases in the cerebral content of cyclic AMP is presented. With regard to the increases produced by electrical stimulation, propranolol, and procaine proved to be more potent than theophylline in reducing the cyclic AMP content; this action was shared by (D)propranolol at high dose levels, but at the lowest dose level, (D)propranolol was found to have a slight, though insignificant, stimulating effect. Practolol was found to have little blocking effect on the electrically induced increases in cerebral cyclic AMP. With regard to the increases produced by adenosine stimulation, neither propranolol nor procaine have proven to be effective blocking agents, although procaine was found to reduce the combined effects of adenosine and electrical stimulation. Since it has been postulated that electrical stimulation releases adenosine, which in turn acts upon adenyl cyclase to increase the cerebral content of cyclic AMP, it is concluded that propranolol must block the effects of electrical stimulation via interference with the liberation of adenosine or via alteration in the membrane potential which accompanies stimulation. 9 references.

**122396** Samanin, R.; Bernasconi, S. Istituto di Recerche Farmacologiche 'Mario Negri', Via Eritrea, 62 I-20157 Milan, Italy **Effects of intraventricularly injected 6-OH dopamine or midbrain raphe lesion on morphine analgesia in rats.** *Psychopharmacologia* (Berlin). 25(2):175-182, 1972.

Two different techniques were employed to measure morphine analgesia, the hot-plate and the tail compression. An intraventricular rejection of 6-hydroxydopamine, which produced a marked decrease of brain noradrenaline and dopamine, strongly potentiated the analgesic effect of morphine. The lesion of midbrain raphe, which lowers forebrain serotonin, antagonized morphine analgesia. 5-hydroxytryptophan restored serotonin levels and the analgesic effect of morphine in midbrain raphe lesioned rats. The role of brain serotonin and catecholamines on morphine analgesia is discussed. 25 references. (Author abstract)

**122399** Davis, W.Marvin; Pinkerton, J.T., III. Department of Pharmacology, University of Mississippi School of Pharmacy, University, MS 38677 Synergism by atropine of central stimulant properties of phenylpropanolamine. *Toxicology and Applied Pharmacology* (London). 22(1):138-145, 1972.

Experiments were conducted to determine whether the known synergism of atropine toward the central excitatory effects of amphetamine would occur also with a weak CNS stimulant. Several doses of phenylpropanolamine (dl-norephedrine, PPA) were tested alone and in combination with 0.4mg/kg of atropine sulfate for effects on locomotor activity of rats. Significant synergism of the locomotor excitatory effect of PPA was found. PPA alone at 45 to 60mg/kg produced amphetaminelike stereotyped behavior at an incidence of 60 to 80%, and the effect of PPA was not altered by atropine. However, atropine significantly synergized the lethality of 60 to 75mg/kg doses of PPA in rats. Mice showed an aggregation lethality effect with PPA like that seen with amphetamine. This influence of aggregation on the LD50 of PPA was greatly magnified by pretreatment with atropine. It is suggested that a synergism of amphetaminelike effects of PPA which may occur with therapeutic combinations of PPA and anticholinergics could cause an increased liability for psychotoxic reactions. 24 references. (Author abstract)

**122443** Jonsson, J.; Gunne, L.-M. Psychiatric Research Center, Ulleraker Hospital, University of Uppsala, S-750 17 Uppsala, Sweden Interaction of fenfluramine with d-amphetamine-induced excitatory behaviour and hyperthermia. *European Journal of Pharmacology* (Amsterdam). 19(1):52-55, 1972.

Male Sprague-Dawley rats were given five 10mg/kg doses of fenfluramine, after which they were given 5mg/kg of d-amphetamine. As compared with rats given d-amphetamine alone, the animals thus treated showed considerably prolonged excitation with stereotyped behavior. Pretreatment with fenfluramine also considerably increased the concentration of amphetamine in the rats' brains, while delaying the disappearance of amphetamine from both the brains and plasma. In addition, pretreatment with fenfluramine counteracted the initial rise in body temperature which is observed when d-amphetamine is administered alone. However, 3 hours later, the animals' body temperatures rose and, after 4 hours, they

averaged 1.4degrees higher than those of animals given only fenfluramine. It is concluded that fenfluramine prolongs certain actions of d-amphetamine but antagonizes others. It is emphasized that metabolic interactions should be taken into consideration in studies in which amphetamine is administered along with other drugs. 15 references. (Author abstract modified)

**122444** Schoenfeld, R.; Uretsky, N. Departments of Psychiatry and Neurology, Children's Hospital Medical Center, Boston, MA 02115 Altered response to apomorphine in 6-hydroxydopamine-treated rats. *European Journal of Pharmacology* (Amsterdam). 19(1):115-118, 1972.

Male Sprague-Dawley rats were given two 250 microgram intraventricular injections of either 6-hydroxydopamine hydrobromide (6-HDA) or vehicle. Four to six weeks after the second injection, several doses of apomorphine hydrochloride were administered to each rat. In additional experiments, perphenazine was administered 15 minutes prior to the apomorphine. The vehicle treated rats responded to the apomorphine with intense sniffing, licking, and occasional gnawing of the wire floor of the cage; these rats remained stationary or moved slowly across the cage. The 6-HDA treated rats reacted to the apomorphine by running back and forth and climbing the walls. The 6-HDA also significantly lowered the apomorphine dose at which the response occurred. The brain norepinephrine and dopamine levels in the 6-HDA treated rats were decreased and there was a significant positive correlation between the degree of dopamine depletion and the dose of apomorphine at which a behavioral effect was first apparent. It is concluded that the modified behavioral responses to apomorphine in the 6-HDA treated rats were a consequence of the stimulation of brain dopamine receptors which are more sensitive to apomorphine as a consequence of the 6-HDA treatment. 22 references.

**122446** Hoyer, Iris; Van Zwieten, P.A. Department of Biopharmacy, University of Amsterdam, Roetersstraat 1, Amsterdam-C, Netherlands The central hypotensive action of amphetamine, ephedrine, phentermine, chlorphentermine and fenfluramine. *Journal of Pharmacy and Pharmacology* (London). 24(6):452-458, 1972.

Amphetamine, ephedrine, phentermine, chlorphentermine, and fenfluramine were injected into the vertebral arteries of anesthetized cats,

after which the effects of these drugs on blood pressure were studied. All drugs lowered blood pressure following infusion into the vertebral artery but showed hypertensive properties when administered intravenously in the same dosage; when injected intravenously, chlorphentermine decreased the blood pressure after a minor initial rise. The hypotensive action of amphetamine was blocked by piperoxan and yohimbine, both alpha-adrenoceptor blocking agents, and by haloperidol, which is known to block central adrenoceptors. The hypotensive action of amphetamine was also abolished in reserpinized cats and a small increase in blood pressure was usually observed in these animals following infusion of amphetamine into the vertebral artery. It is concluded that the hypotensive action of amphetamine is probably due to the mobilization of noradrenaline in the brain. The results suggest that the central hypotensive properties shown by the drugs are probably brought about via stimulation of central alpha-adrenoceptors which causes a decrease in peripheral sympathetic tone. This general principle would also explain the central hypotensive properties of alpha-methyldopa, alpha-methylnoradrenaline, L-dopa, and m-tyrosine. 34 references. (Author abstract modified)

**122448** Berger, Harvey J.; Krantz, John C., Jr. Maryland Psychiatric Research Center Pharmacology Unit, Box 3235, Baltimore, MD 21228 **Phenitron: ineffective blockade of (-)-trans-delta9-tetrahydrocannabinol in mice and dogs.** *Journal of Pharmacy and Pharmacology* (London). 24(6):492-493, 1972.

The effects of phenitron pretreatment on the prolongation by (-)-trans-delta9-tetrahydrocannabinol (THC) of sleeping time in male mice was investigated. It was found that the sleeping time induced by the THC was not significantly altered by the phenitron. An attempt was also made to block the common dyssynergic effects of THC using phenitron; the drug failed to block these effects. In another experiment, dogs which had been injected with THC were given phenitron and their gross behavior, ECG, and respiratory and heart rates observed. The phenitron caused a 20 to 25% decrease in the heart and respiratory rates but effected no changes in gross behavior or ECG. In no case did phenitron alter the ataxic state produced by the THC or abolish its characteristic effects. It is therefore concluded that phenitron is ineffective in blocking the effects of THC in dogs and mice. 4 references.

**122535** Tjioe, Sarah A.; Manian, Albert A.; O'Neill, John J. Dept. of Pharmacology, College of Medicine, Ohio State Univ., Columbus, OH 43210 **Calcium efflux and respiratory inhibition in brain mitochondria: effects of chlorpromazine metabolites.** *Biochemical and Biophysical Research Communications*. 48(1):212-218, 1972.

7-Hydroxychlorpromazine was found to be similar to chlorpromazine in its ability to inhibit brain mitochondrial calcium accumulation and respiration. 7,8-Dihydroxychlorpromazine, however, was found to produce a marked efflux of calcium accumulated by these mitochondrial preparations in the presence of ATP. In addition, this metabolite or one of its orthoquinone forms was observed to gradually inhibit state four respiration and prevent the stimulation of oxygen uptake normally observed upon the addition of phosphate and phosphate acceptor. The possible importance of sulfhydryl groups in these inhibitory actions is discussed. 21 references. (Author abstract)

**122568** Starke, K.; Schumann, H.J. Institute of Pharmacology, Klinikum Essen, Ruhr-University, 43 Essen, Germany **Interactions of angiotensin, phenoxybenzamine and propranolol on noradrenaline release during sympathetic nerve stimulation.** *European Journal of Pharmacology* (Amsterdam). 18(1):27-30, 1972.

In isolated rabbit hearts, angiotensin, phenoxybenzamine, cocaine and propranolol increased the overflow of noradrenaline caused by sympathetic nerve stimulation. After the outflow of transmitter had been raised by propranolol, angiotensin caused a further increase indistinguishable from that observed in non pretreated hearts. The potentiation of overflow by cocaine was prevented in propranolol treated hearts. After the outflow of noradrenaline had been augmented by phenoxybenzamine, addition of angiotensin did not result in a further increase. It is proposed that phenoxybenzamine and angiotensin share a common mechanism of action, i.e. an increase of the amount of the adrenergic transmitter liberated per stimulus from the nerve terminals. 17 references. (Author abstract)

**122571** Scheel-Kruger, Jorgen. Sct. Hans Hospital, Dept. E., 4000 Roskilde, Denmark **Behavioural and biochemical comparison of amphetamine derivatives, cocaine, benztropine, and tricyclic anti-depressant drugs.** *European Journal of Pharmacology* (Amsterdam). 18(1):63-73, 1972.



The present biochemical studies demonstrate that tricyclic antidepressant drugs, such as desipramine, imipramine and protriptyline, which inhibit the reuptake process in central noradrenaline neurons, and benztropine, which inhibits the reuptake process in central dopamine neurons do not increase the accumulation of O-methylated noradrenaline, normetanephrine, O-methylated dopamine, 3-methoxytyramine in the brain of rats pretreated with a monoamine oxidase inhibitor, nialamide. The central stimulant drugs, d-amphetamine, l-amphetamine, p-chloroamphetamine and cocaine increased accumulation in the brain of both normetanephrine and 3-methoxytyramine. Furthermore, these central stimulants decreased the brain noradrenaline level; the brain dopamine level remained unchanged. Dextroamphetamine and l-amphetamine were equally active on brain noradrenaline metabolism, whereas d-amphetamine was most potent on dopamine metabolism. The effect on normetanephrine and 3-methoxytyramine in this biochemical test is correlated with catecholamine releasing properties of the central stimulant drugs and not with an influence on the reuptake mechanism in catecholamine neurons. Comparative behavioral studies in the rats demonstrate similarities between d-amphetamine, l-amphetamine, p-chloroamphetamine and cocaine with respect to development of locomotor and rearing activity as well as stereotyped behavior. Dextroamphetamine was 10 times more potent than l-amphetamine with respect to locomotor activity and four to six times more potent with respect to the development of stereotyped behavior. Benztropine increased locomotor and rearing activity but produced no stereotyped behavior. 47 references. (Author abstract)

**122573** Costall, B.; Naylor, R.J.; Olley, J.E. Postgraduate School of Studies in Pharmacology, University of Bradford, Bradford 7, Yorkshire, England Stereotypic and anticataleptic activities of amphetamine after intracerebral injections. *European Journal of Pharmacology* (Amsterdam). 18(1):83-94, 1972.

Neuroleptic (haloperidol), cholinergic (arecoline) and anticholinergic (atropine) agents were used to investigate the involvement of the caudate - putamen (striatum), globus pallidus and substantia nigra in the stereotypic and anticataleptic activities of amphetamine in rats. Peripheral and intracerebral injection techniques were em-

ployed. A mild stereotyped behavior observed after intrastriatal or intrapallidal amphetamine was inhibited by intraperitoneal haloperidol or arecoline, and potentiated by intraperitoneal atropine. A marked inhibition of the stereotypy induced by peripherally administered amphetamine was observed both after intrastriatal and intrapallidal haloperidol, but only a brief inhibition was observed after similar injections of arecoline. Intrastriatal and intrapallidal amphetamine caused a reduction in the cataleptic effects of peripherally administered haloperidol but not arecoline. In all experiments, the sensitivity of the pallidum was found to be greater than that of the striatum. All effects observed after intranigral drug injections were indistinguishable from those induced by the solvents. Results indicate the involvement of neuronal systems in both the striatum and pallidum with the production of amphetamine stereotypy and its inhibition by neuroleptic and cholinergic agents. Such systems would also appear important for the amphetamine inhibition of neuroleptic induced catalepsy but not cholinergic catalepsy. The effects of intranigral injections require careful interpretation since any slight damage to this area will induce a stereotyped behavior. 29 references. (Author abstract modified)

**122574** McLean, W.G.; Keen, P. Department of Pharmacology, The Medical School, University of Bristol, Bristol BS8 1JD, England Local synthesis and breakdown of noradrenaline in constricted rat sciatic nerves. *European Journal of Pharmacology* (Amsterdam). 18(1):74-78, 1972.

Drugs which inhibit breakdown and synthesis of noradrenaline (NA) were applied to a ligated rat sciatic nerve trunk by the *in vivo* superfusion of Krebs bicarbonate medium which avoids interference with the cell body. Accumulation of noradrenaline proximal to the ligature was linear with time and did not differ significantly from noradrenaline accumulation behind a ligature on nonsuperfused nerves. Inhibition of noradrenaline synthesis by the addition of the tyrosine hydroxylase inhibitor alpha-propyldopacetamide to the superfusing medium significantly decreased noradrenaline accumulation over 12 hr. Inhibiting local breakdown with the monoamine oxidase inhibitor pargyline gave rise to increased noradrenaline accumulation. In the presence of both drugs, noradrenaline accumulation was restored to normal. These findings suggest that



net local noradrenaline synthesis does not contribute to accumulation behind a ligature and hence that this accumulation is a measure of axonal transport. It appears, however, that in this situation synthesis is important in maintaining a steady turnover or noradrenaline within the storage granules which accumulate behind the ligature. 12 references. (Author abstract modified)

**122575** Costall, B.; Naylor, R.J.; Olley, J.E. Postgraduate School of Studies in Pharmacology, University of Bradford, Bradford 7, Yorkshire, England **The substantia nigra and stereotyped behaviour.** *European Journal of Pharmacology* (Amsterdam). 18(1):95-106, 1972.

The acute and chronic effects of bilateral lesions of the substantia nigra upon amphetamine induced and apomorphine induced stereotyped behavior and its modification by haloperidol and arecoline were studied in the rat. A mild spontaneous stereotyped behavior was observed during the acute stage following the induction of nigral lesions. In order to inhibit this stereotypy a 2000 to 2500% increase in the normal antistereotypic dose of haloperidol and large increases in the dose of arecoline were required. Amphetamine, which was shown to induce a dose dependent stereotypy in normal rats, increased the intensity of the spontaneous stereotypy. In contrast, the effects of apomorphine, which was also shown to induce a dose dependent stereotypy in normal rats, were markedly reduced during this acute stage. Although no significant modification of amphetamine stereotypy was apparent at the chronic stage, the ability of apomorphine to induce a stereotyped behavior was virtually abolished. The dose dependent inhibitory effects of haloperidol and arecoline upon amphetamine or apomorphine stereotypy were not significantly modified during the acute or chronic stages after the lesions. Results indicate the nonessential nature of the pars compacta of the substantia nigra and, therefore, the postulated dopaminergic nigro-striatal pathway, for amphetamine stereotypy, and suggest that apomorphine stereotypy is not mediated via a direct action upon the dopamine receptor, but requires an effective nigro-striatal dopaminergic system. Also, it would appear that the mechanisms involved in spontaneous stereotypy are not the same as those of the drug induced state. 28 references. (Author abstract modified)

**122706** Lesse, Henry; Wetterberg, Lennart. Neuropsychiatric Institute, UCLA Center for the Health Sciences, 760 Westwood Plaza, Los Angeles, CA 90024 **Learned behavior and limbic system activity in experimental porphyria.** *Archives of General Psychiatry*. 27(1):119-124, 1972.

Effects of allylisopropylacetamide (AIA), a porphyria inducing compound which produces biochemical changes simulating those occurring in acute intermittent porphyria, an inborn error of metabolism characterized by neuropsychiatric symptoms, on performance of a discrimination task, on limbic system excitability, and on brain electroencephalographic activity, were studied in cats. Small doses blocked learned reactions to environmental signals and to direct limbic system stimulation without impairing motility, sensory function, motivation, or level of arousal. Thresholds for evoking hippocampal after-discharges were markedly elevated. Additional behavioral aberrations and changes in brain electrical activity were induced by higher doses. Findings suggest that AIA decreases hippocampal excitability and interferes with ability to utilize certain signals which have acquired motivational significance during past learning experiences. This experimental model should prove helpful in studying neural and behavioral factors in the pathogenesis of acute porphyria. 26 references. (Author abstract modified)

**122989** Himwich, William A.; Davis, Jimmie M. Thudichum Psychiatric Research Laboratory, Galesburg State Research Hospital, Galesburg, IL **Brain amino acids as affected by acute and chronic administration of chlorpromazine.** *Biological Psychiatry*. 5(1):89-98, 1972.

Rat brain amino acids affected by acute and chronic administration of chlorpromazine (CPZ) were examined. CPZ was administered daily to rats in doses of 6, 12, or 25mg/kg orally for six months. Such long-term administration of CPZ resulted in fewer blood and brain changes than were previously reported for four day administration, pointing up the inability to predict chronic long-term effects from short-term experiments. 28 references. (Author abstract modified)

**123033** Forrest, I.S.; Otis, L.S.; Serra, M.T.; Skinner, G.C. Department of Psychiatry, Stanford University School of Medicine, Stanford Research Institute, Palo Alto, CA 94304 **Passage**

of 3H-chlorpromazine and 3H-delta(9)-tetrahydrocannabinol into the hair (fur) of various mammals. Proceedings of the Western Pharmacological Society. 15:83-86, 1972.

The passage of 3H-chlorpromazine and 3H-delta(9)-tetrahydrocannabinol in the hair of lambs, sheep, rabbits and guinea pigs was investigated. The radioactivity residing in the fur of all animals tested, though varied, was low for both drugs. It is concluded that the role of keratinous tissues in the removal of foreign compounds is a minor one. It is unlikely to account for major fractions in the case of drugs for which the balance sheets of input and output are unsatisfactory. 7 references.

**123631** Van Duijn, H.; Visser, S.L. Laboratory of Clinical Neurophysiology, Valeriuskliniek Vrije Universiteit, Amsterdam, The Netherlands The action of some anticonvulsant drugs on cobalt-induced epilepsy and on the bemegride threshold in alert cats. *Epilepsia* (Amsterdam). 13:409-420, 1972.

The effect of some anticonvulsant drugs on the bemegride threshold and on the focal epileptogenic activity in the ECoG following cortical cobalt application in alert cats was tested. In this way, the influence of phenobarbital, phenytoin, carbamazepine, diazepam and normal saline was examined, each in a group of 10 cats. As expected, phenobarbital and diazepam afforded good protection against bemegride shock, the latter drug being superior in this respect. Phenytoin was the only one of the test drugs to suppress focal epileptogenic activity. Diazepam in fact seemed to have a provoking effect on this activity. 39 references. (Author abstract modified)

**123632** Julien, Robert M.; Halpern, Lawrence M. Department of Medical Pharmacology and Therapeutics, California College of Medicine, University of California, Irvine, CA 92664 Effects of diphenylhydantoin and other antiepileptic drugs on epileptiform activity and Purkinje cell discharge rates. *Epilepsia* (Amsterdam). 13:387-400, 1972.

The effects of antiepileptic drugs on cerebellar Purkinje cell (P-cell) discharge rates and cerebral cortical epileptiform activity were studied in cats with penicillin foci in sensory motor cortex. In control experiments, extracellular microelectrode recordings of P-cell activity revealed characteristic low frequency discharge rates during

periods of cortical quiescence and discharge rates of 150 Hz occurring concomitant with focal cortical spike activity. P-cell discharges abruptly ceased during development of cortical epileptiform bursts (CEB) which became generalized and maximal in both cerebral hemispheres. Following diphenylhydantoin (DPH) CEB frequency and duration were markedly reduced and sustained P-cell discharge rates of 140 Hz were recorded. Following cerebellectomy in DPH treated animals, CEB activity intensified, was more frequent, involved both cerebral hemispheres, and was of much longer duration. Administration of DPH subsequent to cerebellectomy was less effective in reducing CEB activity. After phenobarbital reduction of CEB activity was observed as was a consistent increase in P-cell discharge frequency. Trimethadione and acetazolamide did not reduce CEB activity and no increase in P-cell discharge rate was observed. Thus, after doses of antiepileptic drugs reducing CEB activity, cerebellar P-cell discharge rates were increased. Conversely, P-cell discharge rates did not increase following administration of antiepileptic drugs which did not decrease CEB activity. 20 references. (Author abstract modified)

**123633** Halpern, Lawrence M.; Julien, Robert M. Department of Pharmacology, School of Medicine, University of Washington, Seattle, WA 98105 Augmentation of cerebellar Purkinje cell discharge rate after diphenylhydantoin. *Epilepsia* (Amsterdam). 13:377-385, 1972.

The augmentation of cerebellar Purkinje cell (P-cell) discharge rate after diphenylhydantoin was examined. Extracellular microelectrode recordings were made of cerebellar Purkinje cell discharge rates in the cat before and after systemic administration of antiepileptic compounds. Prior to drug administration, P-cell discharge rate averaged 24 Hz. After diphenylhydantoin (DPH) P-cell discharge rate averaged 141 Hz. High frequency sustained discharges reached a maximum 1.25 hr after DPH and persisted for several hours thereafter. Similar high frequency P-cell discharges averaging 140 Hz were observed in animals chronically pretreated with DPH. After phenobarbital P-cell discharge rates of 72 and 120 Hz were recorded. Following trimethadione or acetazolamide no increase in P-cell discharge rates was observed. The possible relation between cerebellar P-cell activity, antiepileptic drugs, and seizure mechanisms is discussed. 43 references. (Author abstract modified)

**123663** Abreu, Luiz A.; Abreu, R. Raposo. Department of Chemistry and Experimental Therapeutics, Instituto Oswaldo Cruz, Rio de Janeiro Activation of brain succinate dehydrogenase by lithium. *Nature New Biology* (London). 236(69):254-255, 1972.

Although lithium salts are used widely as therapeutic and prophylactic agents against manic-depressive psychosis little is known about the mechanism of lithium effects. An experiment is carried out to determine whether long term treatment with Li<sup>+</sup> affects brain succinate dehydrogenase activity. Two groups of mice were maintained on a standard diet, one group receiving as drinking water a solution containing 100mg of Li<sub>2</sub>CO<sub>3</sub>. A study of the brains show a highly significant increase of the specific succinate dehydrogenase activity in mice receiving Li<sub>2</sub>CO<sub>3</sub>. The data suggests that Li<sup>+</sup> influences brain metabolism and electron transport chain linked to oxidative phosphorylation. 11 references.

**123938** Diaz, Jose-Luis; Huttunen, Matti O. Instituto de Investigaciones Biomedicas, Universidad Nacional Autonoma de Mexico, Mexico, D.F. Altered metabolism of serotonin in the brain of the rat after chronic ingestion of d-amphetamine. *Psychopharmacologia* (Berlin). 23(4):365-372, 1972.

The altered metabolism of serotonin in the brain of the rat after chronic ingestion of d-amphetamine was examined. Dextro-amphetamine at doses of 1mg/kg/day was administered intragastrically to rats for one month. At 18 h after the final dose, a small (16%) increase of brain serotonin concentration was found as well as an increase (30%) of the synthesis and degradation of (3H) serotonin formed from intracisternally injected exogenous (3H)-L-tryptophan. 52 references. (Author abstract)

**124120** von Bahr, Christer; Hietanen, Eino; Glaumann, Hans. Dept. of Pharmacology, Sabbatsberg Hospital, Karolinska Institutet, S-10401 Stockholm 60, Sweden Oxidation and glucuronidation of certain drugs in various subcellular fractions of rat liver: binding of desmethylinipramine and hexobarbital to cytochrome P-450 and oxidation and glucuronidation of desmethylinipramine, aminopyrine, p-nitrophenol and 1-naphthol. *Acta Pharmacologica et Toxicologica* (Kobenhavn). 31(1-2):107-120, 1972.

The oxidation and glucuronidation of the certain drugs was studied in various fractions of rat liver. Included was the binding of desmethylinipramine and hexobarbital to cytochrome P-450 and the oxidation and glucuronidation of desmethylinipramine, aminopyrine, p-nitrophenol and 1-naphthol. The data indicate that in the liver cell neither the plasma membranes nor the Golgi membranes play an important role in drug oxidation or glucuronidation. Secondly, the smooth II microsomes may participate in the hydroxylation and glucuronidation of certain substrates. However, at least one assumption is necessary for these conclusions; namely that the isolation procedures do not specifically change certain membranes as compared to others. A conclusive answer to this possibility must await further studies on the effects of fractionation on the molecular organization of different membranes. 25 references. (Author abstract modified)

**124160** de Mendoza, J.L. Juan; Rodi, M.; Tasset, M.; Gottesmann, Cl. Lab. Psychophysiologie, Fac. des Sciences, Nice, France Inhibition of GABA transaminase and sleep in the rat. *Psychophysiology*. 9(1):88, 1972.

In a paper presented to the 11th Annual Meeting of the Association for the Psychophysiological Study of Sleep it is reported that in order to study the relationship between the central level of gamma-amino-butyric acid (GABA) and paradoxical sleep (PS), 6 male Wistar rats received intraperitoneal single doses of sodium di-n-propylacetate (DPA), just before recovering from a 24 hour PS deprivation. By comparison with control recovering with NaCl solution, the increase of GABA by this inhibitor of GABA transaminase induced no statistical modification either of wakefulness or of PS, during the first 10 hours of recovery. There was a significant decrease in neocortical spindle bursts and an intermediate increase in classical slow wave sleep. Earlier work with rats suggested that neocortical high spindle bursts could be a physiological paroxysmic like activity. The decrease in spindles, after DPA, could possibly be regarded as regularization of central nervous activity; DPA is efficient in treatment of some kinds of epilepsy in man, without disturbance of vigilance. The results cannot be linked to the specific increase of GABA itself; some very active compounds related to GABA (such as gamma-quanidino-butyric acid) also explain them. (Journal abstract modified)



**124170** Schwabe, U.; Berndt, S.; Elbert, R. Institute für Pharmakologie, Medizinische Hochschule, D-3000 Hannover-Kleefeld, Roderbruchstrasse 101, Germany **Activation and inhibition of lipolysis in isolated fat cells by various inhibitors of cyclic AMP phosphodiesterase.** Archives of Pharmacology. 273(1/2):62-74, 1972.

The effects of methylxanthines, papaverine, dipyridamole in imipramine on lipolysis and phosphodiesterase activity of rat adipose tissue were investigated. Lipolysis in isolated fat cells was stimulated by theophylline and caffeine, whereas papaverine, dipyridamole and imipramine had no substantial effect on the basal lipolytic rate. Lipolysis induced by noradrenaline was potentiated by theophylline, but blocked by papaverine, dipyridamole, and imipramine at concentrations between 0.02 to 0.2mM. These agents also depressed lipolysis induced by theophylline and dibutyl cyclic adenosine 3':5'-pn-monophosphate (AMP) and reduced the lipolytic activity of homogenates of adipose tissue. The activity of phosphodiesterase assayed over a wide range of substrate concentrations revealed 2 different Michaelis constants. Both types of phosphodiesterase were inhibited by theophylline, papaverine, dipyridamole, and imipramine in a competitive manner, the low Km enzyme being more sensitive for inhibition than the high enzyme. On both types of phosphodiesterase, papaverine and dipyridamole proved to be 10 to 100 times more potent inhibitors than theophylline and imipramine. To explain the antilipolytic effect of phosphodiesterase inhibitors it is assumed that they do not only affect substrate binding of cyclic AMP to phosphodiesterase but also displace cyclic AMP from the binding site on protein kinase, thus acting as inhibitors of the activation process within the lipolytic system. 37 references. (Author abstract)

**124171** Brandaw, K.; Axelrod, J. Laboratory of Clinical Science, National Institute of Mental Health, Bethesda, Maryland **The biosynthesis of octopamine.** Archives of Pharmacology. 273(1/2):123-133, 1972.

The biosynthesis of octopamine in rats was determined by the administration of amino acid and amine precursors and enzyme inhibitors and measuring the endogenous levels of octopamine. It appeared to proceed as follows: phenylalanine - tyrosine - tyramine - octopamine. Single and repeated administrations of L-DOPA to rats which were pretreated with a monoaminoxidase inhibitor

caused a significant increase of octopamine levels in the brain, indicating an alternate pathway for octopamine formation from catecholamines. Using dopamine-beta-hydroxylase inhibitors it was found that the half life of octopamine in the rat brain is twice as fast as in the heart. Alpha-Methyl-p-tyrosine and 3-iodo-tyrosine hydroxylase inhibitors, were able to reduce the tissue levels of exogenous and endogenous octopamine and noradrenaline. 29 references. (Author abstract modified)

**124174** Bergen, John R. Worcester Foundation for Experimental Biology, Shrewsbury, Mass. 01545 **Suppression of lysergic acid diethylamide (LSD) effects in pregnant rats.** Research Communications in Chemical Pathology and Pharmacology. 3(2):313-319, 1972.

The effect of lysergic acid diethylamide on a rope climbing test was investigated in pregnant and nonpregnant rats. Significantly less of an effect on performance was noted following intraperitoneal injection of 200mg/kg in rats pregnant for 15 days than for an equivalent weight matched, nonpregnant control group. This corresponds to the time when maximal ovarian progesterone production has been reported to occur. On the 19th day of pregnancy, no significant differences could be detected between the 2 groups and this is coincident with the reported rapid fall of progesterone output just prior to parturition. 16 references. (Author abstract)

**124188** Kuhar, Michael J.; Roth, Robert H.; Aghajanian, George K. Connecticut Mental Health Center, 34 Park St., New Haven, Conn. 06508 **Synaptosomes from forebrains of rats with midbrain raphe lesions: selective reduction of serotonin uptake.** Journal of Pharmacology and Experimental Therapeutics. 181(1):36-45, 1972.

Animals with lesions of the midbrain raphe nuclei showed a 75% reduction of synaptosomal uptake activity of 3H-serotonin (3H-5-HT), whereas animals with lesions of the lateral midbrain area exhibited the same uptake activity as unoperated control animals. The uptake activity of radioactive L-tryptophan, dopamine and L-norepinephrine in animals with raphe lesions was not reduced, suggesting that of the 4 compounds tested, only 5-HT was uniquely accumulated by nerve endings of the raphe neurons. The synaptosomal uptake of 3H-5-HT was inhibited by low temperature, dinitrophenol and ouabain and also



by the tricyclic agents imipramine and desmethylinipramine, the former being 10 times more effective as an inhibitor than the latter. Data is consistent with the previously suggested notion that at high concentrations, 5-HT is significantly accumulated by nonserotonergic nerve endings. The time course of reduction of synaptosomal uptake activity and 5-HT levels in the forebrain were measured at various intervals after placements of lesions and compared to the time course of reduction of forebrain tryptophan hydroxylase activity. 50 references. (Author abstract modified)

**124225** Flanigan, William F.; Wilcox, Robert H.; Hartse, Kristyna M.; Rechtschaffen, Allan. University of Chicago, Chicago, IL The EEG and behavioral continuum of the crocodilian *Caiman sclerops*. 2. EEG and EMG spike activity. *Psychophysiology*. 9(1):121, 1972.

In a paper presented to the 11th Annual Meeting of the Association for the Psychophysiological Study of Sleep it is reported that the most dramatic feature of the *Caiman* EEG (10 specimens examined) is large amplitude (150 microvolt) spikes which occur monophasically or polyphasically, unilaterally or bilaterally, and in or out of phase in bilateral monopolar recordings. Telencephalic spikes (the most prevalent) were often accompanied by synchronous spikes from upper jaw muscles (spikes were not recorded in neck or extremity muscles). Spiking increased with behavioral quiescence and sleep, and decreased or transiently vanished with induced or spontaneous behavioral arousal and with respiration. During quiescence, spiking followed a cyclical pattern marked by a gradual buildup apparently followed by a 10 to 30 sec silent period. Six animals also exhibited rhythmic 1 to 3 per sec spiking and intensive 5 to 10 per sec spike bursts which appeared to coincide with elevated arousal thresholds. Forced behavioral arousal for 24 or 48 hours substantially increased spiking during recovery in 4 of 5 animals. Heating (35 to 36 degrees C) and cooling (11 to 14 degrees C) 5 or 24 hours increased and diminished spiking, respectively. Pargyline (20mg/kg) given to 3 animals elicited rhythmic spiking, spike bursts and an overall increase in spike incidence within 24 hours; reserpine (2mg/kg) given to 1 animal eliminated spiking within 24 hours. (Journal abstract modified)

**124272** McIsaac, W.M.; Taylor, Dorothy; Walker, K.E.; Ho, B.T. Texas Research Institute of Mental Sciences, Houston, Tex. 77025 6-Methoxy-1,2,3,4-tetrahydro-beta-carboline -- a serotonin elevator. *Journal of Neurochemistry*. 19(4):1203-1206, 1972.

The effects of 6-methoxy-1,2,3,4-tetrahydro-beta-carboline (6-MeO-THBC) upon brain levels of 5-hydroxytryptophan (5-HT) was examined. 6-MeO-THBC was one compound of an extensive series of compounds synthesized which proved useful in the exploration of the etiology of depression. The compound produced an elevation of 5-HT in mouse and rat brains. Further studies are being carried out to determine the exact mechanism of the action. 9 references.

**124333** Holtzman, Stephen G.; Jewett, Robert E. Emory University, Department of Pharmacology, Atlanta, GA 30322 Some actions of pentazocine on behavior and brain monoamines in the rat. *Journal of Pharmacology and Experimental Therapeutics*. 181(2):346-356, 1972.

The effects of pentazocine, a weak narcotic antagonist analgesic, were studied on operant behavior (continuous avoidance schedule), locomotor activity and brain monoamines in the rat. Operant behavior was increased in a graded manner by 2 to 16mg/kg of pentazocine and decreased by 32mg/kg. Both stimulant and depressant effects were antagonized by the potent narcotic antagonist naloxone (8mg/kg). Pentazocine 8 to 64mg/kg, produced a graded increase locomotor activity which was not prevented by as much as 16mg/kg of naloxone. Stimulation of locomotor activity was blocked by alpha-methyltyrosine, an inhibitor of catecholamine synthesis. The total brain content of norepinephrine, dopamine, and serotonin was reduced by pentazocine; turnover rates were not affected. The depletion of the catecholamines was 2 1/2 to 3 1/2 times greater than that of serotonin. Morphine, in doses as high as 256mg/kg, caused a much smaller reduction in brain norepinephrine than did pentazocine and elevated brain levels of dopamine. Naloxone (16mg/kg) failed to block the effects of pentazocine on brain monoamines but did block those of morphine. These findings have been interpreted as follows: 1) the actions of pentazocine on operant behavior appear to be independent of its effects on brain monoamines; 2) stimulation of locomotor activity by pentazocine may be related to the release of brain monoamines; and 3) some

of pentazocine's agonistic effects are mediated by mechanisms distinct from those which mediate the actions of morphine. 38 references. (Journal abstract)

**125256** Kabes, J.; Fink, Z.; Fusek, J. Meditsinskiy nauchno-issledovatel'skiy institut, Gradets Kralove, Czechoslovakia /Acetylcholine level in brain structures of rats following administration of lysergic acid diethylamide./ Soderzhaniye atsetilkholina v strukturakh golovnogo mozga kry's posle vvedeniya dietilamida lizerginovoy kisloty. Farmakologiya i Toksikologiya (Moskva). 35(2):134-137, 1972.

The effect of lysergic acid diethylamide (LSD) on the acetylcholine (ACh) content in cortical and brain stem structures in rats was investigated. Doses of 80, 200 and 500 microgram/kg of LSD were administered intraperitoneally 30, 90 and 270 minutes before the animals were sacrificed. A significant rise of total ACh occurred within the period between 90 and 270 minutes, with a slight increase having been noted earlier. The ACh values in the brain stem were found to be greatly reduced soon after introduction (between 30 and 90 minutes) of LSD and later on continued to remain below the normal level. The effects of LSD on the inhibitory function of cortical neurons and the effect of the drug on the equilibrium between the activating and inhibitory systems of the brain stem reticular formation are discussed. The correlation between changes in the central cholinergic functions and behavioral effects of LSD is also considered. 11 references. (Journal abstract modified)

**125258** Nemtsov, A.V.; Rimskaya, V.A. Otdel psikhofarmakologii Moskovskogo NII psikiatrii Ministerstva zdoravookhraneniya RSFSR, Moscow /Effects of chlorpromazine, trifluoperazine, promazine and imipramine on the properties of excitable membranes./ Vliyanie aminazina, triflazina, promazina i imipramina na svoystva vzbudimyykh membran. Farmakologiya i Toksikologiya (Moskva). 35(2):145-148, 1972.

Using intracellular microelectrodes, the decrease in membrane potential of individual fibers in an isolated sartorius muscle of the frog was recorded with an increased concentration of potassium ions in the external environment. Preliminary incubation of the muscle in a phenothiazine solution led to diminution of initial depolarization rate, which may imply a reduced

ratio of conductivities of the membrane for potassium and chlorine ions. The antidepressant imipramine, whose chemical structure is close to that of phenothiazine's, differed from the latter in its action on the membrane depolarization rate. 17 references. (Journal abstract modified)

**125260** Oksenkrug, G.F. Laboratoriya psikhofarmakologii Leningradskogo NI psikhonevrologicheskogo instituta im.V.M.Bekhtereva, Leningrad /Effect of the imipramine group of antidepressants on the serotonin level and activity of 5-oxytryptophan-decarboxylase in the brain of albino rats./ Vliyanie antidepressantov gruppy imipramina na soderzhaniye serotoninu i aktivnost' 5-oksitriptofandekarboksilazy mozga belykh kry's. Farmakologiya i Toksikologiya (Moskva). 35(2):150-152, 1972.

Administration of imipramine, demethylimipramine and amitriptyline increased the serotonin level in the brain of albino rats. This effect depended on the dosage and time of administration of the drugs. Imipramine did not affect the activity of 5-oxytryptophan-decarboxylase. The specificity of the observed effect for tricyclic antidepressants and its role in the mechanism of central serotonin-positive action of the preparations under study are discussed. 15 references. (Journal abstract modified)

**125261** Mayskiy, V.V. Kafedra farmakologii lechebnogo i sanitarno-gigiyenicheskogo fakul'teta I Moskovskogo meditsinskogo instituta im.I.M.Sechenova, Moscow /Effect of noninhalation narcotics on stimulation transmission in the corticospinal system./ O vliyaniy neingalyatsionnykh narkotikov na provedeniye vzbuzhdeniya v kortiko-spinal'noy sisteme. Farmakologiya i Toksikologiya (Moskva). 35(2):164-168, 1972.

The effects of hexobarbital, viadryl and sodium oxybutyrate on the potentials of anterior lumbar roots of the spine, developing in response to single and rhythmic stimulation of the motor area of the cerebral cortex and the pyramids of the medulla oblongata were investigated in cats. The potentials produced a stimulation of the cerebral cortex and, especially discharges of the paroxysmal aftereffect, were found to be depressed by much smaller doses of the narcotics under study than were potentials induced by stimulation of pyramids in the medulla oblongata. 11 references. (Journal abstract modified)

**125262** Tsyrlin, V.A. Kafedra farmakologii I Leningradskogo meditsinskogo instituta im.I.P.Pavlova, Leningrad **Effect of neurotropic agents on changes in bioelectric activity of the renal nerve, evoked by stimulation of the descending columns of the spinal cord./ Vliyaniye neyrotropnykh sredstv na izmeneniya bioelektricheskoy aktivnosti pochechnogo nerva, vyzvannye stimulyatsiyey niskhodyashchikh stolbov spinного mozga. Farmakologiya i Toksikologiya (Moskva).** 35(2):168-171, 1972.

The effect of nembutal, morphine and scopolamine on the tonic bioelectric activity and bioelectric reactions recorded in the renal nerve upon stimulation of the descending spinal columns was studied in acute experiments on anesthetized cats. Nembutal, without altering tonic activity, was shown to depress the intensity of bioelectric responses in single and rhythmic stimulation. Morphine and scopolamine, while not exerting any direct stimulating effect on the vasomotor elements, tended to weaken the descending inhibition with the amplitude of tonic bioelectric activity upon administration of morphine then declining and later rising after administration of scopolamine. 7 references. (Journal abstract modified)

**125263** Maksimets, V.A.; Boldina, I.G. Kafedra farmakologii Voenno-meditsinskoy akademii im. S.M.Kirova, Leningrad **Prevention of traumatic shock with levomepromazine under experimental conditions./ Profilaktika travmaticheskogo shoka levomepromazinom v eksperimente. Farmakologiya i Toksikologiya (Moskva).** 35(2):175-177, 1972.

The effect of levomepromazine on development of traumatic shock was investigated in white male rats. Single intraperitoneal administration of levomepromazine in a dose of 5mg/kg 30 minutes before inducement of shock is shown to considerably prolong the life span, protect the organs from epinephrine and norepinephrine depletion and to hinder accumulation of an excess of lactic acid in the blood. 8 references. (Journal abstract modified)

**125531** Keehn, J.D. Atkinson College, York University, Toronto, Ontario, Canada **Effects of trihexyphenidyl on schedule-induced alcohol drinking by rats. Psychonomic Science.** 29(1):20-22, 1972.

The effects of trihexyphenidyl (Artane) on schedule induced alcohol drinking in rats are reported. Three rats from the Maudsley reactive strains and three rats from the Maudsley nonreactive strain were trained to barpress with food reinforcement scheduled at fixed intervals of 1 min. With various alcohol concentration, schedule induced licking was higher in the nonreactive animals but there was little difference in intake between the strains. Injections of trihexyphenidyl attenuated alcohol consumption by all animals, with 3.0mg/kg being the most effective dose. 8 references. (Author abstract)

**125673** Hill, R.G.; Simmonds, M.A.; Straughan, D.W. Dept.of Pharmacology, School of Pharmacy, Univ.of London, 29/39 Brunswick Square, London WC1N 1AX, England **Convulsive properties of d-tubocurarine and cortical inhibition. Nature (London).** 240(5375):51-52, 1972.

The convulsive properties of d-tubocurarine (DTC) and cortical inhibition were examined in cats. The interactions of DTC and gamma-aminobutyric acid (GABA), which is thought to be the cortical inhibitory transmitter, were studied. It is suggested that the convulsant action of DTC is due to its antagonism of the inhibitory influence of endogenous GABA. The increase in firing rate of the feline neocortical neuron produced by DTC was not solely caused by disinhibition since the antagonism of GABA could not be dissociated from the increase in firing rate due to DTC. 14 references.

**125674** Wright, Ernest M. Dept.of Physiology, Univ.of California Medical Center, Los Angeles, CA 90024 **Active transport of lysergic acid diethylamide. Nature (London).** 240(5375):53-54, 1972.

The mechanism of LSD accumulation within the frog choroid plexus was examined and the role of the choroidal epithelium in the distribution of LSD between blood and brain was clarified. It was found that 3H-LSD is accumulated within the frog choroid plexus and that more than 75% of the drug is not irreversibly bound to the tissue. It is thought to be unlikely that LSD is actively transported across the choroidal epithelium. It is suggested that the amine carrier in the choroid plexus is responsible for the active accumulation of LSD and it may be speculated that LSD interacts with similar amine carriers and receptor sites in other cells and tissues. 12 references.

126244 Saavedra, Juan M.; Axelrod, Julius. Laboratory of Clinical Science, National Institute of Mental Health, Bethesda, MD 20014 The normal occurrence of tryptamine in brain and its conversion to N-methyl and N-dimethyltryptamine in vitro and in vivo. (Unpublished paper). Bethesda, MD, NIMH, 1972, 14 p.

The normal occurrence of tryptamine in the brain was determined by a sensitive enzymatic isotopic assay. Conversion of <sup>14</sup>C-tryptamine in small amounts to N-methyl and N-dimethyltryptamine was found when <sup>14</sup>C-tryptamine was injected intracisternally to rats pretreated with a monoamine oxidase inhibitor. The in vitro N-methylation of tryptamine and N-methyltryptamine by dialyzed supernatants from human, rat, guinea pig, mouse and total brain homogenates was also found. It is concluded that the brain is capable of producing psychomimetic N-methyl indole amines from normally occurring precursors. 19 references. (Author abstract modified)

126935 Axelrod, Julius. Laboratory of Clinical Science, National Institutes of Mental Health, Bethesda, MD Biogenic amines and their impact in psychiatry. *Seminars in Psychiatry*. 4(3):199-210, 1972.

Biogenic amines and their impact on psychiatry are discussed. The discovery of the fact that a nerve can liberate a chemical and ensuing developments are reviewed including studies of Ephedrine, imipramine, amphetamine, their metabolism and that of compounds related in structure to them. The way in which basic and clinical research interact in the expansion of knowledge of both brain biochemistry and mental illness is emphasized. 4 references.

127693 Myers, Steven A.; Craves, Frederick B.; Caldwell, Donald F.; Loh, Horace H. Department of Psychiatry, Lafayette Clinic and Wayne State Univ., Detroit, MI 48207 Inhalation induced tolerance and physical dependence: the hazard of opiate suffused marihuana. *Military Medicine*. 137(12):431-433, 1972.

Tests determining whether smoking an inert substance containing morphine would produce signs of tolerance formation and physical dependence are outlined. An alkaloid possessing addicting properties similar to, but less than, those of heroin was used. Sixty adult male mice in a smoking paradigm served as subjects. A considerable amount of morphine survives the combustion

process and is assimilated into the tissues of an animal exposed to the smoke. Extrapolation to the human situation is, at this stage of research, difficult, if not impossible. However, this demonstration of the inherent danger of opiate suffused marihuana should serve as a warning to potential users of such opiate mixtures. The clinician should be mindful of this danger when treating chronic marihuana users. 8 references. (Author abstract modified)

128353 Yehuda, Shlomo; Wurtman, Richard J. Dept. of Nutrition and Food Service, Massachusetts Institute of Technology, Cambridge, MA 02139 Release of brain dopamine as the probable mechanism for the hypothermic effect of D-amphetamine. *Nature (London)*. 240(5382):477-478, 1972.

The release of brain dopamine as the probable mechanism for the hypothermic effect of D-amphetamine was explored in rats. The administration of D-amphetamine to rats kept in an environment of four degrees C caused significant hypothermia. Animals receiving tyramine or the amphetamine analogue beta, beta-difluoroamphetamine, two drugs that share the peripheral sympathomimetic effects of D-amphetamine but are much less able to enter the brain, failed to display significant hypothermia. Hypothermia was also observed among rats pretreated with drugs thought to increase central dopaminergic tone: apomorphine, clonidine, or L-dopa. Moreover, the hypothermia following D-amphetamine was blocked in rats pretreated with pimozide, haloperidol, or ditan, drugs believed to block brain dopamine receptors. Results suggest that central dopaminergic neurons are also involved in thermoregulation and mediate the hypothermia of D-amphetamine treated rats kept in the cold; this latter phenomenon may provide a relatively simple tool for screening drugs that interact selectively with dopaminergic brain neurons and their receptors. 12 references.

129461 Doteuchi, M.; Costa, E. Laboratory of Preclinical Pharmacology, NIMH, Saint Elizabeths Hospital, Washington DC 20032 Gastric lesions induced by restraint and cold exposure: are central adrenergic mechanisms involved. (Unpublished paper). Washington, DC, NIMH, 1972, 4 p.

Nonisotopic measurements of norepinephrine (NE) turnover rate in brain parts of rats kept at 4



and 20 degrees C were made to determine if central adrenergic mechanisms are involved in gastric lesions induced by restraint and cold exposure. Topics investigated were: 1) the protective effects of chlórdiazepoxide and other molecules chemically related to the benzodiazepines on gastric lesions elicited by restraint at 4 degrees C for four hours; and 2) the action of these drugs on catecholamine turnover rate in brain parts of rats kept at 20 and 4 degrees C. Diazepam and desmethyldiazepam reduce the incidence of gastric lesions induced by restraint and cold exposure. However, librium and dilantin are ineffective. The turnover rate of cerebellar NE is increased after cold exposure and this increase is significantly reduced by diazepam, desmethyldiazepam and diphenylhydantoin. However, it cannot be concluded that changes of activity of noradrenergic neurons are involved in mediating the protection displayed by diazepam and desmethyldiazepam against the gastric lesions elicited by cold and restraint. (Author abstract modified)

**130182** Susten, Allan Stephen. Purdue University Chlorpromazine-induced alternations of carbohydrate metabolism: effect of chlorpromazine pretreatment on the insulin response to glucose and tolbutamide in the adrenalectomized rat. (Ph.D. dissertation). Dissertation Abstracts International. Ann Arbor, Mich., Univ. M-films, No. 72-21280 HC\$10.00 MF\$4.00 88p.

The effect of chlorpromazine (CPZ) pretreatment on the insulin response to glucose and tolbutamide in the adrenalectomized rat was studied. Adrenalectomized male albino rats were pretreated with CPZ 60 minutes prior to the intravenous administration of glucose or tolbutamide. Levels of glucose and immunoresponsive insulin (IRI) were determined in serum. Chlorpromazine pretreatment significantly reduced the glucose tolerance in the adrenalectomized animals. The ability of the rats to secrete insulin in response to the glucose load was also found to be significantly reduced. Further, pretreatment of rats with CPZ attenuated and delayed the hypoglycemic response to tolbutamide was also significantly reduced in the CPZ pretreated animals. Results from the experiments demonstrate that CPZ pretreatment reduces the capacity of the pancreatic beta cells in adrenalectomized animals to respond to treatments which induce insulin secretion. The result of the latter, particularly

following a glucose load, would be a decreased access of glucose to the peripheral cells. Thus, the acute CPZ induced glucose intolerant effect observed in adrenalectomized animals is due, at least in part, to a reduced beta cell responsiveness. (Journal abstract modified)

**130355** Smith, Donald F.; Balagura, Saul. Psychopharmacology Research Unit, Aarhus University, Risskov, Denmark The effect of lithium chloride on the electrolyte composition of cerebrospinal fluid of the rat. *Physiology & Behavior*. 9(2):261-262, 1972.

The effect of lithium chloride on the electrolyte composition of cerebrospinal fluid was studied in the rat. A reliable method for obtaining samples of rat CSF is described. The CSF plasma concentration ratios for lithium, sodium, and potassium in LiCl loaded rats were 0.37, 1.09, and 0.53, respectively. The CSF plasma concentration ratios for sodium and potassium in NaCl loaded rats were 1.04 and 0.54 respectively. These results compare favorably with values obtained in other species. 8 references. (Author abstract)

**130361** Florio, V.; Longo, V. G. Laboratori di Chimica Terapeutica, Istituto Superiore di Sanita, Rome, Italy Electroencephalographic effects of bicuculline. *Physiology & Behavior*. 9(2):283-285, 1972.

The effects of bicuculline on the electrical activity of various sites of the cerebrospinal axis have been studied in the rabbit and in the rat. Bicuculline induces electroencephalographic patterns very similar to that of picrotoxin and pentamethylenetetrazol and distinct from that induced by strychnine. 7 references. (Author abstract)

**130382** Falk, John L.; Tang, Maisy. Department of Psychology, Rutgers University, New Brunswick, NJ 08903 Severe polydipsia and antidiuresis produced by diazoxide. *Physiology & Behavior*. 9(2):259-260, 1972.

Severe polydipsia and antidiuresis produced in the rat by diazoxide is reported. Subcutaneous administration of diazoxide to rats in water balance produced a large, dose related increase in four hour water intake. Five doses (40mg/kg each) over a 15 hr period yielded a sustained polydipsia accompanied by antidiuresis and edema. The self-imposed, net positive water load which accumulated (45.8ml) was approximately 12% of the body weight. 12 references. (Author abstract)

**130524** Uyeno, Edward T.; Larsen, Ferol; Pryor, Gordon T. Stanford Research Institute, Menlo Park, CA The interaction of delta9-tetrahydrocannabinol with commonly used drugs. (Unpublished paper). Rockville, MD, NIMH, 1972, 2 p.

The results of two tests performed on rats to determine the interaction of delta9-tetrahydrocannabinol (delta9-THC) with sodium phenobarbital and with caffeine are reported. The first study showed that the acute and chronic injection of delta9-THC or phenobarbital alone, or both together significantly increased the heart rate. Body temperature was significantly reduced by delta9-THC. Although phenobarbital alone had no significant effect on the body temperature, the injection of both drugs produced a significant reduction. The activity test in a photocell chamber showed that the groups treated with both phenobarbital and delta9-THC had significantly lowered mean activity scores than those of the corresponding control groups, indicating the potentiating depressant effect of delta9-THC. The results of the second study indicated that the administration of both caffeine and delta9-THC significantly reduced the body temperature, despite the fact that the acute injection of caffeine alone raised the body temperatures significantly. The mean activity scores of the animals treated acutely or chronically with caffeine, were significantly higher than those of the corresponding control animals. However, other experimental animals administered delta9-THC after the chronic injection of caffeine had significantly lower mean activity scores than that of the corresponding control animals. Like delta9-THC and phenobarbital, caffeine seems to have no significant effect on the rota-rod performance.

**130644** Crowley, Thomas J.; Rutledge, Charles O. no address Brain amines and barbiturate addiction. Final Report, NIMH Grant MH-18208, 1973, 6 p.

The results of a study of rat brain amines and barbiturate addiction are presented. The results would indicate that phenobarbital exerts little effect on norepinephrine uptake, storage, or metabolism in rat brain. Phenobarbital treatment apparently did significantly impair amphetamine induced release of norepinephrine. Aggressive behavior is apparently stimulated by low doses of phenobarbital or methamphetamine, while it is suppressed by higher doses of each. The learning of enhanced aggressive behaviors is impaired by chronic phenobarbital administration, whereas

withdrawal results in a short-term drop in aggressiveness. Chronic methamphetamine administration made a surprising and considerable reduction in aggressive behavior. There was considerable impairment of aggressiveness after chronic imipramine administration.

**130761** Roffman, Mark. University of Rhode Island Behavioral control of drug metabolism and body temperature: biochemical and physiological correlates. (Ph.D. dissertation). Dissertation Abstracts International. Ann Arbor, Mich., Univ. Microfilms, No. 72-22507 HC\$10.00 MF\$4.00 95 p.

Biochemical and physiological correlates of behavioral control of drug metabolism and body temperature in mice were studied. Mice were trained to avoid the aversive effects of hypoxia by emitting a response in the presence of a discriminative stimulus. After several training sessions, the mice learned to decrease hexobarbital narcosis and elevate body temperature in the presence of airflow. After several presentations of the airflow alone, without subsequent hypoxia, the response was extinguished. Exposing Ss to airflow preceding hypoxia at 32 deg C extinguished the response. In the presence of airflow, Ss showed reduction in barbiturate narcosis, increased hexobarbital metabolism, and a significant elevation of body temperature, while in untrained Ss no alteration in narcosis, barbiturate metabolism or body temperature was found. The in vitro metabolism of hexobarbital and p-nitroanisole were increased immediately after, but not four hours after, the presentation of airflow preceding hypoxia. The activity of cytochrome reductase was elevated in the presence of, as well as lack of, the airflow and hypoxia. Hypoxia potentiated hexobarbital narcosis, decreased the rate of hexobarbital metabolism and lowered body temperature in untrained mice. In the presence of airflow, mecamylamine or propranolol, but not phenoxymepazine, inhibited the elevation in body temperature. Exposing mice to hypoxia for several sessions resulted in a lower body weight, liver weight per gram body weight and mg protein 9000 x g supernatant per gram liver. (Journal abstract modified)

**130910** Nakajima, Ryoko; Mikoda, Reiko; Nagawa, Yuji. Takeda Chemical Industries, Ltd., Osaka, Japan Structure-activity relationship of s-triazolo-1,4-benzodiazepines in central nervous depressant action. Journal of the Takeda Research Laboratories (Osaka). 31(3):52A-53A, 1972.

Central depressant activity of 18 new types of 6-phenyl-4H-s-triazolo(4,3a)(1,4)benzodiazepines was studied by seven standard biological tests in small experimental animals. Most of s-triazolobenzodiazepines with substituents of chlor, nitro or trifluoromethyl group in position eight as well as hydrogen or methyl group in position one were equi or more potent than the already known 1,4-benzodiazepines in anticonvulsive, muscle relaxant, calming and sedative effects. Structure activity relationship of s-triazolobenzodiazepines was summarized as follows: electron withdrawing substituents in position eight enhanced the activity, but electron releasing substituents did not affect the activity remarkably. Introduction of methyl group into position one was always most effective in increasing the activity, and substituents larger than ethyl in the same position showed an unfavorable effect to the activity. Substitution of methoxy group in para position of 6-phenyl ring caused a pronounced decrease in activity. (Author abstract)

**130912** Nagaoka, Akinobu; Inoue, Sadamu; Fukui, Hiroshi; Kikuchi, Kenzo. Takeda Chemical Industries, Ltd., Japan Pharmacological study of hydrogenated rugulovasine A and B hydrochlorides: central and peripheral actions. *Journal of the Takeda Research Laboratories* (Osaka). 31(1):19-26, 1972.

The central and peripheral effects of dihydro-rugulovasine A (dihydro RA) and B (dihydro RB) hydrochlorides were studied in experimental animals and compared with those of rugulovasine A and B hydrochlorides. The central affects of these compounds were tested in the rat, mouse, cat and guinea pig to determine hyper or hypotensive action, effect on blood pressure and heart-rate, effect on motor activity and effect on peripheral actions. It was concluded that the dihydrogenation of RA-HCl and RB-HCl did not markedly affect the peripheral actions of the two natural alkaloids, but lessened or abolished only the central actions of RA-HCl. 5 references. (Author abstract modified)

**131131** Swonger, A. K.; Rech, Richard H. Dept. of Pharmacology and Toxicology, School of Pharmacy, University of Rhode Island, Kingston, RI 02881 Serotonergic and cholinergic involvement in habituation of activity and spontaneous alternation of rats in a Y maze. *Journal of Comparative & Physiological Psychology*. 81(3):509-522, 1972.

A study of serotonergic and cholinergic involvement in habituation of activity and spontaneous alternation of rats in a Y maze is reported. Spontaneous alternation (SA) was measured in a Y maze which rats were permitted to freely explore for 8 min. sessions. 5-HT depletors of methysergide did not affect SA. However, either LSD, or d-amphetamine in combination with methysergide, PCA, or PCPA was found to interfere with SA. Scopolamine also disrupted SA, but pretreatment with 5-HT or amphetamine blocked this action. Amphetamine reversal of the scopolamine induced disruption of SA did not occur in subjects depleted of 5-HT or pretreated with methysergide. Amphetamine disrupted habituation of exploratory activity alone or after PCPA or PCA. PCPA or PCA alone did not affect habituation. Scopolamine interfered with habituation of activity. Methysergide caused an increase in the initial activity level, while LSD produced a dose dependent decrease. 34 references. (Author abstract)

**132153** Ryall, R.W.; De Groat, W.C. Neurophysiology Research Laboratory, Montefiore Hospital and Medical Center, Bronx, NY 10467 The microelectrophoretic administration of noradrenaline, 5-hydroxytryptamine, acetylcholine and glycine to sacral parasympathetic preganglionic neurons. *Brain Research* (Amsterdam). 37(2):345-347, 1972.

The microelectrophoretic administration of noradrenaline (NA), 5-hydroxytryptamine (5-HT), acetylcholine (ACh) and glycine to sacral preganglionic neurons were studied in cats. Glycine proved to be the most potent inhibition of parasympathetic neurons and its onset and offset of action were generally faster than those of the other depressants. The effect of NA, 5-HT and ACh were also usually depression. 5-HT did not excite the parasympathetic neurons. It is suggested that if any of these amines are transmitters to parasympathetic neurons, then they are more likely to be inhibiting than excitatory. 13 references.

**132164** Magherini, P.C.; Pompeiano, O.; Thoden, U. Istituto di Fisiologia Umana, Cattedra II, Università di Pisa, Pisa, Italy Rhythmic activity of the vestibulo-oculomotor system induced by a cholinergic drug. *Brain Research* (Amsterdam). 37(2):367, 1972.

Rhythmic activity of the vestibulo - oculomotor system induced by physostigmine was in-



vestigated in decerebrate cats. Intravenous injection of physostigmine sulphate produced bursts of rapid eye movements. The ocular movements within each burst were characterized by a fast phase, followed by a slow one. Monophasic potentials synchronous with the ocular jerks were recorded from the vestibular nuclei, the surrounding reticular formation, the ascending medial longitudinal fasciculi and the oculomotor nuclei. These potentials did not depend upon proprioceptive impulses from eye muscles since: 1) they preceded the ocular movements; and 2) they could still be induced by the anticholinesterase drug (physostigmine) in low decerebrate preparations in spite of the absence of the ocular movements. Units recorded from the medial and descending vestibular nuclei, but not from the lateral vestibular nucleus, showed typical changes in the pattern of discharge after physostigmine. These changes were generally characterized by bursts of unit activity during ocular movements in one direction and inhibition of the discharge during ocular jerks in the opposite direction. These opposite responses always preceded the fast phase of the ocular movements within the burst. These findings indicate the existence of a cholinergic mechanism, probably reticular in origin, which excites neurons of the vestibulo-oculomotor system. The regularity of the ocular movements within the bursts, as well as the periodic occurrence of these ocular bursts may be related to the presence of negative feedback mechanisms within the vestibulo-oculomotor system, capable of interrupting rhythmically the discharge of the vestibular neurons. (Author abstract)n

**132363** Costa, E. Laboratory of Preclinical Pharmacology, National Institute of Mental Health, Saint Elizabeths Hospital, Washington, DC 20032 Psychotropic drugs. (Unpublished paper). Washington, DC, NIMH, 1972, 34 p.

The biochemical, electrophysiological and behavioral responses elicited by psychotropic drugs are reviewed. Topics include morphology of synapses; biochemistry of synapses; pharmacology of synapses (drug induced enhancement of synaptic activity and reduction of synaptic activity); reserpine; alpha-methyltyrosine; alpha-methyldopa; phenothiazine tranquilizers; lithium; amphetamine; monoamine oxidase inhibitors; and tricyclic antidepressants. 12 references.

**132367** Doteuchi, M.; Costa, E. Laboratory of Preclinical Pharmacology, National Institute of Mental Health, Saint Elizabeths Hospital, Washington, DC 20032 Gastric lesions induced by restraint and cold exposure: a study of central monoaminergic mechanism. (Unpublished paper). Washington, DC, NIMH, 1972, 1 p.

The effect of some minor tranquilizers on ulcers produced in rats in the cold was studied to investigate the hypothesis that the changes in activity of a given monoaminergic neuronal population can be monitored by estimating the turnover rates of catecholamines and indolealkylamines. Turnover rates of catecholamines were calculated from the initial rate of decrease on norepinephrine (NE) and dopamine (DM) after blockage of their biosynthesis by alpha-methyltyrosine methylester hydrochloric acid. Diazepam and N-desmethyldiazepam injected five minutes before restraining prevented ulceration in 50% of the animals. Turnover rate of NE and DM in the cerebellum and striatum was significantly increased after cold exposure. The turnover rate of hypothalamic NE was not changed in cold exposure. The increased turnover rate of NE in the cerebellum and DM in striatum elicited by cold was inhibited by diazepam and N-desmethyldiazepam, however, these two drugs failed to change turnover rate of catecholamines at 22 degrees C. Oxazepam, nitrazepam, and chloriazepoxide failed to show any preventive effect against ulcer formation, and 3-hydroxydiazepam was less effective than diazepam. These drugs were inactive on the turnover rate of catecholamines. The drugs which can prevent ulceration are also the drugs which increase catecholamine turnover rates. Since the turnover rate of catecholamines in the hypothalamus of cold exposed rats did not increase, it cannot be concluded whether the benzodiazepines that prevent gastric ulceration act on catecholaminergic nerves of the hypothalamus.

**132368** Costa, E. Laboratory of Preclinical Pharmacology, National Institute of Mental Health, Saint Elizabeths Hospital, Washington, DC 20032 Pharmacological implications of the changes of brain monoamine turnover rates elicited by (+) amphetamine and some chemically related compounds. (Unpublished paper). Washington, DC, NIMH, 1972, 55 p.

The pharmacological implications of the changes of rat brain monoamine turnover rates



elicited by (+) amphetamine and some chemically related compounds are discussed. Topics include: depletion of brain norepinephrine (NE) by (+) amphetamine; neuronal localization of p-OH-norephedrine, a metabolite of (+) amphetamine; effects of amphetamine on the turnover rate of brain catecholamines and motor activity; effect of amphetamine analogues on anorexia, motor activity and turnover rate of brain catecholamines; effect of phenmetrazine, aminorex, and p-Cl-amphetamine, p-Cl-methamphetamine and chlorphentermine on the steady state concentrations of brain monoamines; effect of phenmetrazine, aminorex and (+) p-Cl-amphetamine on the motor activity and turnover rate of brain catecholamines; action of fenfluramine on monoamine stores of rat tissues; and action of norfenfluramine and (-) p-Cl-amphetamine on telencephalic - diencephalic 5-hydroxytryptamine stores. 51 references.

**132369** Wooten, G.Frederick; Thoa, Nguyen B.; Kopin, Irwin J.; Axelrod, Julius. Laboratory of Clinical Science, National Institute of Mental Health, Bethesda, MD 20014 **Enhanced release of dopamine-beta-hydroxylase and norepinephrine from sympathetic nerves by dibutyl cyclic-AMP and theophylline.** (Unpublished paper). Bethesda, MD, NIMH, 1972, 16 p.

Dibutyl cyclic adenosine 3',5'-monophosphate (AMP) and theophylline are shown to enhance stimulation induced release of dopamine-beta-hydroxylase (DBH) and norepinephrine (NE) in vitro stimulation of the hypogastric nerve to the guinea pig vas deferens in the presence of a normal extracellular calcium concentration. In a calcium free medium stimulation induced release of DBH was completely blocked. However, stimulation induced release did occur when either dibutyl cyclic AMP or theophylline was added to the calcium free medium. As in the medium containing a normal calcium concentration, dibutyl cyclic AMP enhanced spontaneous release of DBH. The release of DBH was proportional to that of NE whether stimulation was spontaneous or electrically induced and whether or not theophylline or dibutyl cyclic AMP was present. Thus, dibutyl cyclic AMP and theophylline do not require extracellular calcium to cause release of neurotransmitter by exocytosis at sympathetic nerve endings. These results suggest that cyclic AMP may have a role in release, acting either in parallel with calcium or indirectly by mobilizing intracellular, bound calcium. 30 references.

**132508** Nicoll, Rodger A. Laboratory of Neuropharmacology, National Institute of Mental Health, Saint Elizabeths Hospital, Washington, DC 20032 **The effects of anesthetics on synaptic excitation and inhibition in the olfactory bulb.** (Unpublished paper). Washington DC, NIMH, 1972, 24 p.

The effects of anesthetics (pentobarbital, hexobarbital, halothane, urethane, chloralose, chloral hydrate and ethanol) on the extracellular field potentials of the olfactory bulb of the rabbit produced by lateral olfactory tract stimulation were analyzed. Relatively large doses of anesthetics reduced both the antidromic invasion of mitral cells and the synaptic excitation of granule cells, the latter being somewhat more sensitive to the anesthetics. A wide dose range of anesthetics prolonged the granule cell inhibition of mitral cells. The prolongation appeared to be a specific effect on the inhibitory synapse. Amino-oxyacetic acid, an inhibitor of gamma amino butyric acid (GABA) catabolism had little effect on the synaptic inhibition or on the ability of hexobarbital to prolong the inhibition. This suggests that the prolongation seen with anesthetics is not a result of interfering with GABA catabolism. 41 references. (Author abstract)

**132528** Fertziger, Allen. University of Maryland Hospital, Baltimore, MD **Dilantin, brain electrolytes, the so-called sodium pump and seizures.** *Conditional Reflex.* 7(3):177, 1972.

At the 12th meeting of the Pavlovian Society of North America, dilantin, brain electrolytes, the sodium pump and seizures were discussed. A diphenylhydantoin (DPH) effect on isolated lobster neurons is described which may be related to the mechanism of action of DPH. Measurements of the unidirectional influx of potassium ions have been made in isolated axon bundles taken from the walking leg of the lobster, *Homarus americanus*. DPH was found to stimulate this influx. No preincubation was required to obtain this effect. Treatment with the metabolic inhibitor, 2,4-dinitrophenol abolished this effect. DPH has no effect on the potassium efflux. Kinetic studies reveal that the dilantin effect appears to be stimulating potassium transport by increasing the affinity of the transport system for potassium. These findings suggest that DPH stimulates active potassium transport in these nerve cells. Previous studies indicate that electrolyte disturbances, particularly accumulation of potassium ions in the extracellular space, are con-

comitants of seizure activity in cats and rats. An increase in the unidirectional influx of potassium ions would be one way of preventing this type of disturbance. It is suggested that these observations of DPH may be related to the anticonvulsant action of this drug. (Author abstract modified)

**132543 Wilpizeski, Chester R.** Department of Otolaryngology, Thomas Jefferson University Medical College, Philadelphia, PA **Effect of salicylate on auditory detection thresholds measured by conditioned avoidance responses: sensory impairment or motivation decrement? Conditional Reflex.** 7(3):188, 1972.

At the 12th meeting of the Pavlovian Society of North America, data collected from avoidance conditioned guinea pig, cat and monkey concerning the effect of salicylate on auditory detection thresholds measured by conditioned avoidance responses was presented. In addition to other side effects, large single or cumulated doses of aspirin (salicylate) are known to reduce hearing acuity in man and this finding has been confirmed in monkeys, cats and guinea pigs using conditioned avoidance behavior for quantifying auditory detection threshold levels. In spite of the fact that salicylate is known to raise auditory nerve thresholds measured electrophysiologically, it can be argued that the analgesic property of salicylates reduces the noxious or painful concomitants of the unconditioned stimulus (UCS), and failure to respond to the acoustic conditioned stimulus may reflect motivation reduction and not sensory impairment of the ear. The data collected verify that attenuation of UCS intensity does result in higher threshold levels, but also that the major effect of salicylate is on auditory sensitivity and is not due primarily to motivational changes. (Author abstract modified)

**132642 Van Frank, Richard M.; Johnson, Irving S.** Lilly Research Laboratories, Eli Lilly and Company, Indianapolis, IN **46206 Fractionation by zonal centrifugation of brain of normal rats and rats treated with morphine.** Life Sciences. 11(8):365-373, 1972.

The brains of normal and morphine treated male Sprague-Dawley rats were homogenized by explosive nitrogen decompression. The resulting homogenate was fractionated using a sucrose Ficoll gradient in a B-XXIX zonal centrifuge rotor. Analysis with a Cary Model 15 spectrophotometer revealed three characteristic optical

density peaks for subcellular particulate material in normal rat brains. The brains from the rats treated with morphine, however, routinely produced only two such peaks. In addition, the locations of the peak activities of acetylcholinesterase and acid phosphatase were shifted in the analyses of the brains of the morphine treated animals. 10 references. (Author abstract modified)

**132645 Angeletti, Pietro U.; Levi-Montalcini, Rita; Caramia, Felice.** Laboratorio di Biologia Cellulare, 00196 Rome, Italy **Structural and ultrastructural changes in developing sympathetic ganglia induced by guanethidine.** Brain Research (Amsterdam). 43(2):515-525, 1972.

Injections of guanethidine into newborn mice and rats result in progressive and irreversible lesions of sympathetic ganglia and in a complete sympathectomy similar to that obtained with a specific antiserum to the nerve growth factor (NGF) (immunosympathectomy) and with 6-hydroxydopamine (chemical sympathectomy). Studies at the optical microscope performed in the first days after administration of guanethidine show the progressive disappearance of immature neurons and a marked increase of glial and satellite cells. Two months after the discontinuation of the treatment the sympathetic ganglia are reduced to sclerotic nodules barely detectable at the dissection microscope. The nerve cell population of para- and prevertebral chain ganglia is reduced to three to five percent of that of controls. Studies at the electron microscope performed toward the end of the first week of treatment on the superior cervical ganglion show, in some neurons, mitochondrial lesions and in others dilation and disruption of the endoplasmic reticulum. The destructive effects of guanethidine are discussed and compared with those caused by 6-hydroxydopamine and bretylium tosylate. 5 references. (Author abstract)

**132656 Eranko, Liisa; Hill, Caryl; Eranko, Olavi; Burnstock, Geoffrey.** Department of Anatomy, University of Helsinki, Siltaavuorenpenger, Helsinki 00170, Finland **Lack of toxic effect of guanethidine on nerve cells and small intensely fluorescent cells in cultures of sympathetic ganglia of newborn rats.** Brain Research (Amsterdam). 43(2):501-513, 1972.

Pieces of sympathetic ganglia of newborn rats were cultivated in modified Rose chambers in

Medium 199 supplemented with serum, insulin, penicillin and glucose. Guanethidine sulphate was added to make the following concentrations in the medium: 0 (controls), 1, 3, 9, or 36mg/l. The cultures were daily examined using dark ground and phase contrast microscopy. After 6 to 8 days of culture with guanethidine, the catecholamines were demonstrated with the formaldehyde induced fluorescent method. There was a clear increase in the number of the small intensely fluorescent cells in cultures with 1mg/l of guanethidine sulphate, suggesting that it has a direct effect on these cells. Cultures with higher concentrations showed variability in the number of these cells, probably due to the depletion of their catecholamine content. Light microscopic appearances of guanethidine cultures did not differ from control cultures in nerve cell structure, nerve fiber growth rate or cellular composition of the outgrowth. It is therefore concluded that guanethidine has no apparent effect on sympathetic nerve cells in vitro. 27 references. (Author abstract)

**132676** Kirsten, E.B.; Schoener, E.P. Department of Pharmacology, College of Physicians and Surgeons, Columbia University, New York, NY 10032 **Antagonism of pentylenetetrazol excitation by anticonvulsants on single brain stem neurons.** *Neuropharmacology* (Oxford). 11(4):591-599, 1972.

A functionally homogenous group of vestibular feline neurons responding to linear motion were used to study the actions of pentylenetetrazol, trimethadione, diazepam, pentobarbital, and diphenylhydantoin. In 90% of the neurons studied, pentylenetetrazol (5mg/kg) produced an excitatory response of short duration. Ten percent of the neurons exhibited inhibition of activity after the administration of pentylenetetrazol. The pentylenetetrazol response appears to depend upon the type of synaptic input to a neuron rather than an interaction between pentylenetetrazol and a specific neurotransmitter. Trimethadione, diazepam, pentobarbital, and diphenylhydantoin all depress vestibular neuronal activity. Trimethadione (120mg/kg) and diazepam (0.2mg/kg) are equieffective in raising by 100% the threshold for pentylenetetrazol induced neuronal excitability. Pentobarbital (2 to 5mg/kg) is also a very effective antipentylenetetrazol agent, while diphenylhydantoin (10mg/kg) shows little pentylenetetrazol antagonism. 31 references. (Author abstract)

**132678** Prichard, J.W. Department of Neurology, Yale University School of Medicine, New Haven, CT **Effect of phenobarbital on a leech neuron.** *Neuropharmacology* (Oxford). 11(4):585-590, 1972.

Sodium phenobarbital caused a characteristic sequence of changes in the intracellularly recorded activity of the Retzius cells of leech segmental ganglia. An initial period of slight depolarization associated with greatly increased excitatory synaptic impingement and firing rate was followed by a 10 to 15 mV hyperpolarization which was interrupted every few seconds by large depolarizations surmounted by small, rapidly repeating action potentials. The hyperpolarized phase was associated with decreased input resistance; it was unaffected by the substitution of propionate for chloride in the bathing fluid but was reduced and eventually abolished by the elevation of external potassium from 4 to 44 mM, which procedure also reduced and finally abolished the undershoots of the action potentials. When synaptic transmission was suppressed with 20 mM magnesium sulfate, most of the excitatory events of the phenobarbital response did not appear, but the hyperpolarization developed as usual. All of the above phenomena were reversible and repeatable. These data suggest that a selective and reversible increase in membrane permeability to potassium is a principal direct effect of phenobarbital on this particular neuron. The excitatory portions of the response appear to be secondary to drug induced changes in neurons synapsing on the Retzius cell. 8 references. (Author abstract)

**132679** Hironaka, T.; Otsuka, M. Department of Pharmacology, Faculty of Medicine, Tokyo Medical and Dental University, Bunkyo-ku, Tokyo, Japan **The effect of dimorpholamine on crayfish neuromuscular junction.** *Neuropharmacology* (Oxford). 11(4):573-584, 1972.

The action of dimorpholamine on crayfish neuromuscular junction was studied to obtain a clue to the mechanism of action of the drug on the mammalian central nervous system. Excitatory and inhibitory junctional potentials (e.j.p.s and i.j.p.s) were recorded with intracellular or extracellular microelectrode. Dimorpholamine increased the amplitude of intracellularly and extracellularly recorded e.j.p.s two to four times the control size. The drug increased the input resistance of muscle fibers by 20 to 60%. Dimorpholamine markedly increased the probability of quantal release of excitatory transmitter,



while the quantum size of the extracellular e.j.p.s was slightly reduced by the drug. It was concluded that the main mechanism of action of dimorpholamine to increase the size of e.j.p.s is an increase in the amount of excitatory transmitter released from the terminals by nerve impulses. Under the action of dimorpholamine, the amplitude of intracellular i.j.p.s was increased by a factor of 1.2 to 3.0, while the sensitivity of the postsynaptic membrane to gamma-aminobutyric acid was not altered by the drug. The main mechanism of action of dimorpholamine to augment the i.j.p.s size is attributed to the increase in membrane resistance of muscle fibers. 26 references. (Author abstract)

**132681** Jurna, I.; Grossmann, W.; Nell, T. Institut für Pharmakologie und Toxikologie der Universität des Saarlandes, D-665 Homburg/Saar, Germany **Depression by amantadine of drug-induced rigidity in the rat.** *Neuropharmacology* (Oxford). 11(4):559-564, 1972.

The effect of amantadine (hydrochloride and sulphate) on the rigidity produced by reserpine and oxotremorine was studied in 48 Wistar rats. Amantadine abolished the rigidity and the changes in alpha reflex activity brought about by reserpine and oxotremorine. In animals given these drugs, it depressed alpha hyperactivity and increased the latency between stimulus artifact and the first alpha reflex discharge. Gamma activity reduced by reserpine was increased by amantadine. The increase in gamma activity observed after oxotremorine was not reduced. Amantadine given alone increased alpha reflex discharges, but did not change the latency between stimulus artifact and the first alpha discharge or gamma reflex discharges. Amantadine hydrochloride and amantadine sulphate did not differ in their action on rigidity and spinal motor control. 22 references. (Author abstract)

**132683** Fyro, B.; Nyback, H.; Sedvall, G. Departments of Psychiatry and Pharmacology, St.Goran's Hospital, S-104 01 Stockholm 60, Sweden **Tyrosine hydroxylation in the rat striatum in vitro and in vivo after nigral lesion and chlorpromazine treatment.** *Neuropharmacology* (Oxford). 11(4):531-537, 1972.

Tyrosine hydroxylation in the striatum of male Sprague-Dawley rats was determined by measuring the formation of tritiated water from 3H-3,5-tyrosine in vitro and the accumulation of 14C-

dopamine formed from i.v. administered 14C-tyrosine in vivo. Four days after a unilateral lesion of the nigro-striatal dopamine pathway, the in vitro tyrosine hydroxylase activity of the striatum on the lesioned side was reduced to about 10% of that on the intact side. The accumulation of 14C-dopamine formed in vivo from 14C-tyrosine was reduced to about 25%. Following both acute and chronic chlorpromazine treatment of unlesioned rats, the accumulation of labeled dopamine, formed from 14C-tyrosine in the striatum, was doubled. However, neither acute nor chronic drug treatment significantly altered the tyrosine hydroxylase activity. The results are taken as evidence that the acceleration of dopamine synthesis in the striatum following chlorpromazine is mediated predominantly through other mechanisms than induction of tyrosine hydroxylase. 23 references. (Author abstract)

**132684** Brooks, D.C.; Gershon, M.D.; Simon, R.P. Department of Anatomy, Cornell Medical College, 1300 York Avenue, New York, NY 10021 **Brain stem serotonin depletion and pontogeniculo-occipital wave activity in the cat treated with reserpine.** *Neuropharmacology* (Oxford). 11(4):511-520, 1972.

The time course of serotonin (5-HT) was determined in several regions of the cat brain following treatment with reserpine (0.75mg/kg, i.p.). The results were compared with the temporal course of ponto-geniculo-occipital wave activity (PGORes) induced by similar drug treatment. These experiments revealed a good correlation between the initial decrease in 5-HT throughout the brain and the appearance of PGORes. During recovery, however, 5-HT levels remained low at the time when regulation of PGO wave activity began to return to normal. In the second part of this study, the effect upon PGO wave activity of infusions of reserpine into the ventricular and subarachnoid spaces was investigated. Infusions of reserpine phosphate (250 micrograms) into the fourth ventricle caused changes in wave activity similar to those induced by systemic administration of the drug. In contrast, infusions into several different regions of the subarachnoid space caused only minor changes in PGO wave activity. Serotonin levels, measured at the time when PGORes appeared following infusion of reserpine into the fourth ventricle, were significantly depressed only in the pons. These results



are consistent with the hypothesis that monoaminergic neurons exert a tonic inhibitory influence at the brainstem level, which serves to regulate or gate rapid eye movement type PGO waves. 24 references. (Author abstract modified)

**132685** Brooks, D.C.; Gershon, M.D. Department of Anatomy, Cornell Medical College, 1300 York Avenue, New York, NY 10021 An analysis of the effect of reserpine upon ponto-geniculo-occipital wave activity in the cat. *Neuropharmacology* (Oxford). 11(4):449-510, 1972.

The effect of reserpine upon ponto-geniculo-occipital (PGO) wave activity has been studied, using implanted electrodes, in a series of experiments on unrestrained cats. Five stages of reserpine action have been defined. In stage 1, drug induced waves (PGORes), resembling the waves normally present during rapid eye movement (REM) sleep (PGOREM), appear and gradually increase in frequency but may be suppressed by arousing stimuli. In stage 2, PGORes occur with a very regular frequency of 15 to 25 waves per minute and cannot be suppressed by arousal. Animals are heavily sedated but awake. In stage 3, PGORes become modulated in frequency and amplitude. Both cortical synchrony and a low voltage cervical EMG are associated with enhanced wave activity. In stage 4, PGORes gradually become inhibited during periods of behavioral arousal. In stage 5, REM sleep returns, but REM type PGO waves continue to appear during slow wave sleep, several minutes before the onset of REM sleep. Regulation of PGORes, during stages 3 and 4, can be accounted for by postulating that this activity is inhibited by arousal. Regulation of PGORes during stage 5 suggests the existence of an additional influence, which is maximal at the end of each REM sleep episode and declines progressively to become minimal in the minutes immediately preceding the next period of REM sleep. 27 references. (Author abstract)

**132686** Faingold, C.L.; Berry, C.A. University of Missouri, Institute of Psychiatry, St. Louis, MO 63139 Effects of antihistaminic agents upon the electrographic activity of the cat brain: a power spectral density study. *Neuropharmacology* (Oxford). 11(4):491-498, 1972.

The actions of three representative antihistaminics, tripeleminamine (TPM), diphenhydramine (DPA), and chlorpheniramine (CPA)

on the electrical activity of the cat brain have been examined with the aid of power spectral density analysis. During the slow intravenous infusion of these drugs, DPA alone induced an increase in cortical synchrony but later induced cortical desynchrony like that seen throughout the infusions of TPM and CPA. Hippocampal theta (3.5-5 Hz) activity was induced by all three drugs, but computer analysis delineated subtle differences in the patterns of onset and dominance with the drugs, suggesting a greater complexity of hippocampal rhythms than previously reported. Bimodal activity in the range of 1 to 2 and 3 to 4.5Hz was seen with all three drugs in the reticular formation, thalamus and cortex, and in the hippocampus as well with DPA and CPA. The total normalized cortical power approximated 100% throughout the infusion of TPM, while the CPA and DPA cortical power values fluctuated and reached final values of approximately 200% just prior to paroxysm. All three drugs induced epileptiform paroxysms followed by hypersynchronous activity. 12 references. (Author abstract)

**132689** Sparber, S.B.; Tilson, H.A. Department of Pharmacology and Psychiatry Research Unit of the Department of Psychiatry, University of Minnesota, Minneapolis, MN 55455 Schedule controlled and drug induced release of norepinephrine-3H into the lateral ventricle of rats. *Neuropharmacology* (Oxford). 11(4):453-464, 1972.

Trace doses of tritiated norepinephrine (NE-3H) or carbon 14 urea (urea-14C) were injected into the lateral ventricle of Long-Evans male rats 1 hour prior to ventricular perfusion with a push pull cannula. While working on a high fixed-ratio (FR) schedule of reinforcement, more radioactivity from NE (and metabolites) was in the perfusate than when working on a low FR schedule. When reinforcement was withheld (extinction), the behavioral effect was accompanied by an abrupt change in the profile of radioactivity in the perfusate. To determine if release of the catecholamine (or metabolites) can be specific, approximately equipotent behavioral disruptive doses of mescaline and (+)-amphetamine were injected intraperitoneally. Both drugs almost immediately disrupted the operant and isotonic saline (which had no effect upon the operant) and produced an increase in radioactivity from urea-14C at the time of injection. Only (+)-amphetamine produced an increase in radioactivity from NE-3H following

drug injection. This indicates that extracellular markers are sensitive to transient environmental (both internal and external) changes while compounds that are presumably bound intraneuronally might be preferentially releaseable by drugs thought to act through those aminergic systems. 32 references. (Author abstract)

**132690** Glisson, S.N.; Karczmar, A.G.; Barnes, L. Department of Pharmacology and Therapeutics, Loyola University Stritch School of Medicine, 2160 South First Avenue, Maywood, IL 60153 **Cholinergic effects on adrenergic neurotransmitters in rabbit brain parts.** *Neuropharmacology* (Oxford). 11(4):465-477, 1972.

A cholinergic adrenergic coupling in the case of the electroencephalogram (EEG) antirecruitment effects of anticholinesterases in rabbits was demonstrated. To further investigate this phenomenon, experiments were carried out in rabbits to determine the effects of the anticholinesterase, diisopropyl phosphofluoridate (DFP), upon the levels of norepinephrine and dopamine in the midbrain diencephalon and the caudate nucleus. Pretreatment with the monoamine oxidase inhibitor JB835 - DOPA combinations resulted in a significant decrease in the levels of norepinephrine, while dopamine levels were markedly elevated, primarily in the midbrain diencephalon. Both the norepinephrine decrement and the dopamine increment were partially blocked by atropine, while atropine methyl nitrate blocked only the elevation of the dopamine levels. It was concluded that the central actions of DFP result in the decrease of norepinephrine levels, while the dopamine levels become elevated in response to the peripheral effects of DFP. 32 references. (Author abstract modified)

**132695** Jakoubek, B.; Buresova, M.; Hajek, I.; Etrychova, J.; Pavlik, A.; Dedicova, A. Institute of Physiology, Czechoslovak Academy of Sciences, Prague, Czechoslovakia **Effect of ACTH on the synthesis of rapidly labelled RNA in the nervous system of mice.** *Brain Research* (Amsterdam). 43(2): 417-428, 1972.

A single dose of ACTH in mice decreases the incorporation of 5-3H-uridine into brain RNA without affecting concomitantly the amount of radioactivity, bound to nucleotides, occurring in the TCA soluble fraction of the brain. As revealed by polyacrylamide electrophoresis, this ACTH induced inhibition coincides with the formation of

rapidly labeled RNA in brain, the majority of which was found in fractions migrating more slowly than 28 S and in those localized between 18 S and 4 S. In order to study the effect of ACTH on the neuronal metabolism, the incorporation of labeled uridine into the nucleolar, nuclear and perikaryal RNA was studied by quantitative autoradiography. A marked reduction of grain density in these structures was found. The intensity of the inhibition was time dependent. The time course of changes in the specific activity of brain RNA and of grain density in spinal motoneurons indicated that the ACTH induced inhibition had a transitional character. The possible significance of the results obtained for the interpretation of RNA changes accompanying learning is discussed. 33 references. (Author abstract)

**132703** Corrodi, Hans; Fuxe, Kjell; Lidbrink, Peter. Department of Pharmacology, University of Goteborg, Stockholm, Sweden **Interaction between cholinergic and catecholaminergic neurones in rat brain.** *Brain Research* (Amsterdam). 43(2):397-416, 1972.

With the help of histochemical, biochemical and functional analyses of DA and NA in the rat central nervous system after treatment with various types of anticholinergic drugs, the interaction between cholinergic and catecholaminergic neurones has been studied. The histochemical analyses showed that the DA depletion induced by tyrosine hydroxylase inhibition from the neostriatal and limbic but not the median eminence DA terminals was slightly reduced by the anticholinergic drugs. On the contrary the NA depletion induced by tyrosine hydroxylase (H44/68) inhibition was increased in the hypothalamic and cortical NA nerve terminals. After DA-beta-hydroxylase inhibition with FLA-63, an increased depletion of NA was observed only in the cortical NA nerve terminals. It is suggested that the amine turnover is slightly reduced in the telencephalic DA nerve terminals and increased in the NA nerve terminals. The neuroleptic induced increase in DA turnover seen after H44/68 was partly reduced by anticholinergic drugs. The increase in NA turnover, however, was not influenced by either selective DA or combined DA and NA receptor blockade. The anticholinergics counteracted neuroleptic induced cataleptic behavior in various functional tests, whereas the immobilization was not affected. The interpretation is given that neostriatal cholinergic synapses mainly act in-

independently of the DA synapses and that the cholinergic neostriatal projection has a modulatory effect on locomotor activities induced by the nigro neostriatal DA system. In this connection, the limited beneficial effects of anticholinergic therapy in Parkinson's disease is discussed. The results suggest that the activity in the ascending DA neurones can partly be regulated by two cholinergic systems, one to the neostriatum and one striato nigral cholinergic tract. 52 references. (Author abstract)

**132706** Dairman, Wallace; Christenson, James G.; Udenfriend, Sidney. Roche Institute of Molecular Biology, Nutley, NJ Changes in tyrosine hydroxylase and dopa decarboxylase induced by pharmacological agents. *Pharmacological Reviews*. 24(2):269-289, 1972.

Administration of L-dopa to rats resulted in decreased activity in vitro of catecholamine biosynthetic enzymes in peripheral tissues, but not in the brain. Decreased tyrosine hydroxylase activity was demonstrated in the adrenals, the heart, and the vasculature; a decrease in L-amino acid decarboxylase activity was confined to the liver. In both cases, the decreased enzyme activity appeared due to diminished levels of enzyme protein. The causative factors in reducing the liver decarboxylase are seemingly the catecholamines formed from administered L-dopa and excess serotonin formation from administered L-5-hydroxytryptophan. The enzyme aromatic L-amino acid decarboxylase is common to both the noradrenergic and serotonergic pathways and is also capable of forming other biologically active amines. The effects on tyrosine hydroxylase and aromatic L-amino acid decarboxylase, as well as those on dopamine-beta-hydroxylase and monoamine oxidase, may be an attempt by the animal to compensate for the overproduction of biogenic amines. Physicians who treat their patients with drugs containing amino acids capable of forming such amines should be aware of the possibility of inducing changes in enzyme systems involved in the catecholamine and serotonin pathways. 55 references. (Author abstract modified)

**132719** Dewey, W.L.; Jenkins, J.; O'Rourke, T.; Harris, L.S. School of Medicine, University of North Carolina, Chapel Hill, NC 27514 The effects of chronic administration of trans-delta9-tetrahydrocannabinol on behavior and the car-

diovascular system of dogs. *Archives Internationales de Pharmacodynamie et de Therapie* (Ghent). 198(1):118-131, 1972.

The daily intravenous administration of delta9-tetrahydrocannabinol (delta9-THC) produced a marked tolerance to the behavioral effects of this compound in six mongrel dogs. Similar results were obtained with delta8-THC in the only dog tested. The minimal effective acute i.v. dose of delta9-THC to produce ataxia and other behavioral changes is 0.5mg/kg. In one dog, the effects of 161mg/kg delta9-THC given intravenously after chronic treatment were less than those observed following 0.5mg/kg in a drug naive dog. There were no behavioral responses which would indicate a withdrawal syndrome following abrupt stopping of the medications. Tolerance to the behavioral effects of delta9-THC developed over a range of doses when the injections were made only once every 8 days. Behavioral tolerance could still be observed 23 days after the last injection of delta9-THC produced bradycardia in four of seven dogs tested but this changed to tachycardia at higher doses of delta9-THC on approximately day 6 or 8 of treatment. There was no significant change in blood pressure in these dogs after either acute or chronic administration. 18 references. (Author abstract)

**132759** Leslie, G.B.; Hayman, D.G.; Ireson, J.D.; Smith, S. Pharmacology Department, Pfizer Ltd., Sandwich, Kent, England The effects of some beta adrenergic blocking agents on the central and peripheral actions of tremorine and oxotremorine. *Archives Internationales de Pharmacodynamie et de Therapie* (Ghent). 197(1):108-111, 1972.

Four beta adrenergic blocking agents were tested for their ability to prevent some central and peripheral actions of tremorine and oxotremorine. Male albino mice were given the test compound s.c. 30 min before tremorine or oxotremorine. Pronethalol, propranolol and alprenolol all showed some activity against both the central and peripheral tremor actions of tremorine. None were active in preventing hypothermia. Against oxotremorine, the beta blocking agents were less active. Practolol did not cause hypothermia at high dose levels, but was least effective in preventing the effects of tremorine. Propranolol was the most potent against both tremorine and oxotremorine. 11 references.



132777 DeFeudis, F.V. Institute of Psychiatric Research, Indiana University Medical Center, Indianapolis, IN **Specificity of the effect of lithium injections on the entry of carbon atoms of glucose into mouse brain in vivo.** Archives Internationales de Pharmacodynamie et de Therapie (Ghent). 197(1):141-146, 1972.

Short-term (3hr) injections of lithium (LiCl) (300mg/kg) increased significantly the entry of radioactive carbon atoms of D-glucose into the brains of adult, male, Swiss albino mice. The specificity of the action of LiCl was indicated by the findings that identical lithium ion treatments either decreased, or did not alter, the entry into brain of radioactive carbon atoms of D-mannose, D-fructose, D-mannitol, sucrose, or urea. In mice which had been injected with LiCl daily (11 days), the increased entry of radioactive carbon atoms of glucose into the brain was evident at 1, 3 or 5hr, but not at 48hr, after the last lithium ion treatment. 13 references. (Author abstract)

132779 Fennessy, M.R.; Lee, J.R. University of Melbourne, Department of Pharmacology, Parkville, Victoria 3052, Australia **The effect of benzodiazepines on brain amines of the mouse.** Archives Internationales de Pharmacodynamie et de Therapie (Ghent). 197(1):37-44, 1972.

Oral effective dose 50 (ED50) values of the benzodiazepines (chlordiazepoxide hydrochloride, diazepam, nitrazepam, medazepam, clonazepam and flurazepam hydrochloride) have been determined in Commonwealth Serum Laboratories mice using the rotarod motor coordination test. Chlorazepam is the most potent and nitrazepam is the least potent in causing motor incoordination. Brain levels of noradrenaline, dopamine, 5-hydroxytryptamine, and 5-hydroxyindole acetic acid were measured spectrofluorometrically 30 minutes after administration of the ED50 (incoordination) doses of the six benzodiazepines. Diazepam, nitrazepam and clonazepam significantly increase noradrenaline levels while chlordiazepoxide hydrochloride reduces these levels in mice. Brain dopamine levels are increased by clonazepam, medazepam, and nitrazepam but they are reduced by flurazepam hydrochloride. Clonazepam is the only benzodiazepine to significantly increase the brain levels of 5-hydroxytryptamine whereas chlordiazepoxide hydrochloride and nitrazepam significantly alter 5-hydroxyindole acetic acid levels. Although the six benzodiazepines are structurally similar, there are

large potency differences in producing incoordination and in affecting brain amine levels. 13 references. (Author abstract modified)

132893 Eade, Norman R.; MacLeod, Stuart M.; Renton, Kenneth W. Department of Pharmacology and Therapeutics, McGill University, Montreal, Quebec, Canada **Inhibition of hepatic microsomal drug metabolism by the hydrazines Ro 4-4602, MK 486, and procarbazine hydrochloride.** Canadian Journal of Physiology & Pharmacology (Ottawa). 50(7):721-724, 1972.

The effect of three hydrazine derivatives, Ro 4-4602, MK 486, and procarbazine hydrochloride, structurally related to the DOPA decarboxylase inhibitors, on hepatic microsomal drug metabolizing enzymes is described. All three compounds when given as pretreatment significantly prolonged pentobarbital sleeping time. In vitro, the hepatic microsomal N-demethylation of aminopyrine was inhibited. The results show that all three hydrazine compounds are effective inhibitors of oxidation. It is possible that these drugs may be the sources of clinically significant interaction when administered in combination with other agents which undergo hepatic transformation. 15 references. (Author abstract modified)

133048 no author. no address /**Ultrastructural changes in isolated rat brain mitochondria.**/ no title. Progress Report, NIMH Grant MH-20309, 1972. 3 p.

Brain mitochondria undergo a transformation to an orthodox form during incubation with succinate plus Pi. In this form, brain mitochondria are quite fragile. Calcium uptake and respiration by rat brain mitochondria are inhibited by hydroxylated metabolites of chlorpromazine. Inhibitory actions are exhibited by 7-hydroxychlorpromazine and chlorpromazine; 7,8 dihydroxychlorpromazine promotes a calcium efflux from mitochondria loaded with calcium in the presence of adenosine triphosphate. This metabolite also inhibits state 4 oxygen uptake and inhibits oxidative phosphorylation. (Author abstract modified)

133076 Kwiatkowska, Eugenia; Bichonski, Ryszard. Akademia Medyczna, Klinika Psychiatryczna, ul.Kopernika, Cracow, Poland /**Behavior of biophysical blood properties in children with mental disorders receiving chlorpromazine treatment.**/ Zachowanie sie biofizycznych wlasciwosci krwi u dzieci z zaburzeniami



psychicznymi leczonych chlorpromazyna. 6(1):67-71, 1972. Psychiatria Polska (Warszawa).

The behavior of the surface tension and that of the electric potential and conductivity was studied in the blood of children receiving chlorpromazine treatment because of various disorders. The 24 children were undergoing treatment at a clinic; there were 18 boys and 6 girls, 8 from 3 to 7 years old, and 16 from 7 to 13 years old. The diagnoses were: 7 characteropathy, 3 epilepsy and characteropathy, 6 schizophrenia, 2 catatonic syndrome, and 6 mental retardation and cretism. Most of them received chlorpromazine for the first time. Apart from the surface tension and the electric potential and conductivity, the viscosity, the density, and concentration of hydrogen ions in the blood were determined. The results were compared with those obtained in normal children. Chlorpromazine therapy was found to bring about slight changes in the surface tension and the electric potential in the blood of children with mental disorders, but to affect neither the electric conductivity, nor the viscosity, or the concentration of hydrogen ions. 16 references. (Author abstract modified)

**133126** Prabhu, V.G.; Rise, N.L.; Oester, Y.T. Department of Physiology and Pharmacology, Chicago College of Osteopathic Medicine, Chicago, IL The effect of experimental local inflammation on the action of barbiturates in rat. Archives Internationales de Pharmacodynamie et de Therapie (Ghent). 195(2):343-350, 1972.

Localized inflammations were induced in rats by s.c. injections of aqueous suspensions of yeast, carrageenan, charcoal and by s.c. implantation of cotton pellets (granuloma). At intervals of 3 hours and five days after the induction of inflammation, administration of hexobarbital and barbital was made in these rats. The aim was to ascertain if and to what extent the responses to these barbiturates were altered by the various forms of inflammation. The results indicate that a significant increase in the sleeping time and a decrease in the utilization rate of hexobarbital were noted only in those rats bearing 5-day-old yeast induced inflammation. The results of sleeping times of barbital, a nonmetabolized barbiturate, were not significantly different. During yeast induced inflammation, the induction of liver microsomal enzymes by phenobarbital or chlordane was not impaired. 18 references. (Author abstract modified).

**133128** Plotnikoff, N.; Will, F.; Evans, A.; Meekma, P. General Pharmacology Department, Abbott Laboratories, North Chicago, IL 60064 **PS-2747: a new antidepressant agent.** Archives Internationales de Pharmacodynamie et de Therapie (Ghent). 195(2):330-342, 1972.

N-(3,4,5-trimethoxycinnamoyl)-1,1-dimethyl-propynylamine, (PS-2747) is a new type of structure with antidepressant as well as tranquilizing properties. Its antidepressant properties were demonstrated by the modified DOPA test, desoxy-n potentiation, MAO inhibitor potentiation, anticonvulsant studies and evoked potential studies. Tranquilizing effects were revealed by behavioral and neurological changes in animals, escape responses from auditory stimulation, conditioned avoidance studies and EEG studies. PS-2747 is extremely potent (1-25mg/kg orally in mice) and has a duration of action of 24 hours. It is not a MAO inhibitor. There is a 100-fold difference between the LD50 dose of PS-2747 and its effective antidepressant dose in mice, giving it a highly favorable therapeutic index. EEG studies showed a sleep pattern and an elevated threshold for an arousal response by electrical stimulation of the reticular formation. 7 references.

**133129** Scheel-Kruger, J. Sct.Hans Mental Hospital, Department E, Roskilde, Denmark **Studies on the accumulation of O-methylated dopamine and noradrenaline in the rat brain following various neuroleptics, thymoleptics and aceperone.** Archives Internationales de Pharmacodynamie et de Therapie (Ghent). 195(2):372-378, 1972.

The influence of some neuroleptic drugs (chlorpromazine, chlorprothixene, pimozide, spiramide), thymoleptic drugs (desipramine, imipramine) and the noradrenaline blocking drug, aceperone, on the accumulation of brain normetanephrine and 3-methoxytyramine was studied in male Wistar rats pretreated with an MAO inhibitor, pargyline. The results demonstrate that the neuroleptic drugs when combined produced a highly significant increase of O-methylated dopamine, 3-methoxytyramine, while the other drugs did not produce alteration on this metabolite. Chlorpromazine and chlorprothixene in a 10mg/kg dose produced the largest increase of O-methylated noradrenaline, normetanephrine (2.0 and 1.8 times the control value, respectively). Spiramide (5mg/kg) and pimozide in various doses (1, 5 and 10mg/kg), in combination, produced a

small but significant increase of normetanephrine (1.4 times the control), whereas aceperone (10mg/kg) and imipramine (50mg/kg) produced an even smaller but still significant increase of normetanephrine (1.3 times the control). None of the drugs used produced any marked changes on the brain dopamine and noradrenaline levels. 28 references. (Author abstract modified)

**133130** Starke, K. Institute of Pharmacol., Ruhr-University, Hufelandstrasse 55, 43 Essen, Germany Interactions of guanethidine and indirect-acting sympathomimetic amines. *Archives Internationales de Pharmacodynamie et de Therapie* (Ghent). 195(2):309-314, 1972.

The time course of the interactions guanethidine, tyramine, and amphetamine is reported. All experiments were performed in isolated perfused rabbit hearts and the following estimations were made: noradrenaline uptake, by comparing the amount added to the arterial inflow and the amount recovered from the venous effluent; noradrenaline release by tyramine; and noradrenaline output evoked by sympathetic nerve stimulation. The results demonstrated that, while the action of guanethidine on the uptake of noradrenaline can be easily washed out, the inhibition of tyramine induced noradrenaline release by only 1/10 of this concentration persists. Thus some intracellular action seems to be prevented by guanethidine. Noradrenaline was not released by guanethidine. In the release of noradrenaline by tyramine, an action on storage granules may occur, and it is possible that guanethidine interferes with this action. Experiments with amphetamine, infused in addition to guanethidine, prevented the accumulation of the blockade. 18 references.

**133132** Starke, K.; Wagner, J.; Schumann, H.J. Institute of Pharmacology, Ruhr-University, Hufelandstrasse 55, 43 Essen, Germany Adrenergic neuron blockade by clonidine: comparison with guanethidine and local anesthetics. *Archives Internationales de Pharmacodynamie et de Therapie* (Ghent). 195(2):291-308, 1972.

A comparative study was carried out on the isolated rabbit heart, the frog sciatic nerve, and the rabbit cornea, in order to investigate the mechanism by which clonidine, guanethidine, tetracaine, and procaine block adrenergic transmission. Tetracaine and procaine depress impulse conduction in the sciatic nerve and noradrenaline

release caused by sympathetic nerve stimulation in similar concentrations and probably by an identical mechanism; guanethidine and clonidine, by contrast, inhibit noradrenaline release much more efficiently. Guanethidine may be accumulated in adrenergic neurons to reach local anesthetic concentrations; no indication was found of an accumulation of clonidine. D-Amphetamine counteracts the block of adrenergic transmission induced by guanethidine and clonidine, but not by tetracaine. It is concluded that clonidine inhibits adrenergic transmission by a specific interference with noradrenaline release. Guanethidine may have a similar specific site of action, but a local anesthetic mechanism cannot be excluded. Procaine in lower concentrations potentiates noradrenaline output during sympathetic nerve stimulation by inhibition of reuptake. In isolated rabbit hearts, the four drugs reduce the uptake of infused noradrenaline, and the release of noradrenaline by tyramine. 26 references. (Author abstract)

**133182** Koe, B.K.; Constantine, J.W. Department of Pharmacology, Medical Research Laboratories, Pfizer Inc., Groton, CT Blocking H3-norepinephrine uptake and some guanethidine-induced effects with tricyclic psychotherapeutic drugs. *Archives Internationales de Pharmacodynamie et de Therapie* (Ghent). 195(1):71-80, 1972.

Since a common membrane pump mechanism is believed to transport norepinephrine (NE) and guanethidine into neurons, ability to block NE uptake should parallel ability to antagonize the effects induced by guanethidine; this action was tested in a group of tricyclic psychotherapeutic agents. The results showed that the blocking action of several tricyclic drugs in male Sprague-Dawley rats on H3-norepinephrine uptake parallels their antagonism of guanethidine induced depletion of NE in heart. Doxepin exhibits the characteristics of a NE uptake blocker in cats but does not prevent guanethidine induced effects on the nictitating membrane and blood pressure. In rats, doxepin is less active than desipramine in inhibiting uptake of H3-NE and blocking guanethidine induced depletion of NE in heart. A dissimilarity in the relative activity of monomethylamino and dimethylamino compounds may explain, in part, imipramine's marked and doxepin's weak antagonism of guanethidine in man. 31 references.

**133212** Fuller, R.W.; Roush, B.W. Lilly Research Laboratories, Indianapolis, IN 46206 **Substrate-selective and tissue-selective inhibition of monoamine oxidase.** *Archives Internationales de Pharmacodynamie et de Therapie* (Ghent). 198(2):270-276, 1972.

Selective inhibition of the oxidation of substrates in vivo was tested with different monoamine oxidase inhibitors (MAO). MAO activity in tissues from male albino Wistar rats and Cox standard strain mice treated with Lilly 51641 (N-cyclopropyl-2-chlorophenoxyethylamine) or pargyline was assayed with phenylethylamine or tryptamine as substrate. Pargyline showed greater potency when phenylethylamine was the substrate and caused greater inhibition in tissues in which phenylethylamine oxidative capacity was high (rat liver, mouse liver, mouse heart). L-51641 showed greater potency with tryptamine as the substrate and caused greater inhibition in tissues in which tryptamine oxidative capacity was high (rat brain, rat heart, mouse brain). In mice pretreated with the MAO inhibitor and then given exogenous C14 - labeled amines, L-51641 protected tryptamine more than phenylethylamine from MAO in brain, whereas pargyline protected phenylethylamine more effectively. In heart, phenylethylamine was protected by pargyline but not by L-51641; tryptamine was not protected by either inhibitor. In liver, phenylethylamine was protected by pargyline but not by L-51641; tryptamine was protected by L-51641 and even better by pargyline. The results are further demonstration that MAO may exert preferential effects in different tissues on the oxidation of particular MAO substrates. 10 references. (Author abstract modified)

**133213** Barnett, A.; Goldstein, J.; Taber, R.I. Department of Pharmacology, Schering Corporation, Bloomfield, NJ 07003 **Apomorphine-induced hypothermia in mice; a possible dopaminergic effect.** *Archives Internationales de Pharmacodynamie et de Therapie* (Ghent). 198(2):242-247, 1972.

The effect of apomorphine on the body temperature of mice together with a possible antagonistic effect of haloperidol were investigated. Groups of five male CF No.1-S mice, 20 to 24 grams in weight, were housed in a temperature controlled room and body temperatures taken with an Ellab probe inserted into the esophagus. All drugs were injected i.p. in a volume of 10ml/kg. Peak decreases in temperature and peak

behavioral effects (head searching and rearing) occurred at 2 to 8mg/kg apomorphine; peak temperature responses occurred 30 min after apomorphine. The hypothermic effect of apomorphine was antagonized competitively by haloperidol, 0.25 and 1.0mg/kg. Phentolamine, thioridazine and chlorpromazine failed to antagonize apomorphine. The hypothermic effect appears to be due to dopamine receptor stimulation through an action on the central nervous system. 12 references.

**133214** Atkinson, R.; Watkinson, B.; Weetman, D.F. Department of Pharmacology, School of Pharmacy, Sunderland Polytechnic, Sunderland Co.Durham, England SRI 3SD. **The interaction between desmethylinipramine and guanethidine on the rabbit ileum. The importance of the noradrenaline uptake process in the reversal of guanethidine-induced adrenergic neurone blockade.** *Archives Internationales de Pharmacodynamie et de Therapie* (Ghent). 198(2):385-391, 1972.

The relationship between the ability of the tricyclic drugs to block noradrenaline uptake and the reversal of guanethidine induced blockade of the adrenergic neurone was studied in isolated segments of ileum from New Zealand White rabbits. Desmethylinipramine facilitated the restoration of the effects of sympathetic nerve stimulation, but no reversal of the guanethidine induced blockade of the adrenergic neurones took place. Tyramine and dexamphetamine completely reversed the block produced by guanethidine. Desmethylinipramine, cocaine and dexamphetamine increased the responses of the ileum to noradrenaline but tyramine did not produce this effect. Desmethylinipramine (0.1microg/ml) produced the greatest effect, increasing the effectiveness of noradrenaline threefold. With the drugs used in this study there was no correlation between block of noradrenaline uptake and ability to reverse the guanethidine induced adrenergic neurone blockade. 37 references.

**133215** Hahn, R.A.; Kelly, M.G.; Shamma, M.; Beal, J.L. Pharmacology Division, College of Pharmacy, Ohio State University, Columbus, OH **Cardiovascular effects of veronamine.** *Archives Internationales de Pharmacodynamie et de Therapie* (Ghent). 198(2):392-396, 1972.

The cardiovascular effects of veronamine were studied in anesthetized adult mongrel dogs. The i.v.injection of graded doses (0.1to 1.0mg/kg) produced a dose related decrease in mean arterial



blood pressure and a reduction in pressure of the perfused hindlimb. Intraarterial injection of veronamine (0.25 to 1.0mg/kg) to the hindlimb also reduced hindlimb perfusion pressure in a dose related manner. The duration of the systemic hypotension varied, lasting 1 to 3 minutes with low doses of veronamine while a dose of 1.0mg/kg produced hypotension lasting 5 to 20 minutes. Alterations in cardiac function consisted of bradycardia and reductions in left ventricular dP/dt. The systemic effects of veronamine are blocked either by bilateral cervical vagotomy or pretreatment with atropine, which indicate mediation through cholinergic mechanisms. The effect of veronamine in the perfused hindlimb is not sensitive to atropine treatment, indicating that veronamine may also possess noncholinergic, smooth muscle relaxing properties. 2 references.

**133292** Rosestein, R. Veterans Administration Center, White River Junction, VT Respiratory effects of chlorpromazine in unanesthetized decerebrate cats. *Archives Internationales de Pharmacodynamie et de Therapie* (Ghent). 196(1):164-175, 1972.

The respiratory effects of chlorpromazine (CPZ) were assessed under steady state conditions in 25 unanesthetized decerebrate cats. The alveolar tension of CO<sub>2</sub> was varied by administration of the gas to produce hypercapnia and by the use of hyperventilation to produce hypocapnia. CPZ, 0.5mg/kg, i.v., produced a significant and sustained decrease in the resting level of end expiratory CO<sub>2</sub>, the slope of the V and VTCO<sub>2</sub> response curves, and the CO<sub>2</sub> stimulus threshold. These effects were not attenuated by vagotomy nor necessarily eliminated by debuffering (section of nerves IX and X). They were thus attributed to a direct central action of the drug. Quantitative alterations in the response engendered by debuffering, however, pointed to a contribution from peripheral receptors. The possibility that this contribution was indirect, being dependent on the level of central neural input, is discussed. It appeared that in decerebrate cats CPZ has a differential effect on the central regulatory control mechanism and as a depressant with regard to the steady state transfer function or gain of the system. 21 references. (Author abstract)

**133294** Lavy, S.; Herishanu, Y.; Conforti, N. Department of Neurology, Hadassah University Hospital, Jerusalem, Israel The effect of L-dopa on

cortical and subcortical electrical activity in normal unrestrained rats. *Archives Internationales de Pharmacodynamie et de Therapie* (Ghent). 196(1):275-279, 1972.

The effects of L-dopa on the electrical activity of the brain was studied in 12 young male albino rats of the Hebrew University strain. The administration (i.p.) of 50mg/kg L-dopa did not significantly change the electrical activity in any of the areas observed during the first 30 to 60 min after the injection. Approximately 1 hr later, however, long runs of slow and spiky activity of high amplitude, with a paroxysmal character, were observed. After each run, synchronization but no depression of EEG activity was seen. These changes were more pronounced in the cortex and caudate nucleus. During the 3 hr period the rats were akinetic, with semiclosed eyes and did not respond to external stimuli. It is suggested that the electrical effect of L-dopa is related to L-dopa metabolites, such as dopamine and norepinephrine. 4 references.

**133295** Doda, M.; Gyorgy, L.; Pfeifer, A.K.; Zara-Kaczian, E.; Fodor, M. Institute of Experimental Medicine, Hungarian Academy of Sciences, Budapest, Hungary The pharmacology of N, alpha-dimethyl-N-beta-chloroethyl-phenethylamine. HCl-effects on the autonomic nervous system. *Archives Internationales de Pharmacodynamie et de Therapie* (Ghent). 196(1):280-287, 1972.

The peripheral effects of an adrenergic alpha-receptor blocker, structurally related to metamphetamine, N, alpha-dimethyl-N-beta-chloroethyl-phenethylamine hydrochloride (DZO-9) are described in animal studies. In the decapitated and the anesthetized cat, a 2 to 3mg/kg i.v. dose of DZO-9 raised blood pressure, contracted the nictitating membrane, increased respiration and heart rate, and produced sudden intestinal contraction. All these effects of DZO-9 are blocked by hexamethonium, indicating that the compound is a ganglionic stimulant. DZO-9 is a chloroethylene derivative of metamphetamine, which it resembles only in its effect on the nictitating membrane contraction; it is therefore not a ganglionic blocker. The compound has anti-tyramine, antiadrenaline and antinoradrenaline effects, when administered in medium doses. It is submitted that the study provides evidence that DZO-9 undergoes cyclization in vivo. 9 references.



**133299** Southgate, P.J. Wyeth Institute of Medical Research, Taplow, Buckinghamshire, England **Central and peripheral actions of the acetylcholine antagonist, ambutonium bromide.** Archives Internationales de Pharmacodynamie et de Therapie (Ghent). 196(2):376-382, 1972.

A study of the activity of ambutonium, as compared with that of atropine, hyoscine or propantheline, both peripherally and centrally, is presented. Antiacetylcholine and antihistamine activities were shown by tests with guinea pig ileum; antioxotremorine activity was shown in mice (inhibition of salivation and tremor); antiulcer activity was shown in rats. Hyoscine was the most potent antagonist of the tremor and salivation effects; ambutonium had a similar potency to atropine in inhibiting salivation but was 15 times less active in inhibiting the central effect of tremors. It is suggested that ambutonium is of particular value as an antisecretory agent and spasmolytic, particularly in the gastrointestinal tract and should be devoid of CNS actions in effective therapeutic doses. This may be due to its diminished ability to pass the blood-brain barrier. 12 references.

**133301** Nakano, J.; Prancan, A.V. Departments of Pharmacology and of Medicine, University of Oklahoma School of Medicine, Oklahoma City, OK 73104 **Effects of adrenergic blockade on cardiovascular responses to ethanol and acetaldehyde.** Archives Internationales de Pharmacodynamie et de Therapie (Ghent). 196(2):259-268, 1972.

The hemodynamic effects of the i.v. infusion of ethanol and acetaldehyde were studied in control anesthetized dogs and in dogs pretreated with reserpine, phenoxybenzamine, propranolol or pyrazole. With blood levels less than 2mg/ml of ethanol, slightly increased heart rate, systemic arterial pressure, and myocardial contractile force were observed. With blood levels above 3mg/ml, however, these three parameters decreased. Acetaldehyde also increased these parameters in proportion to the dose administered. The positive chronotropic and inotropic actions and pressor action of acetaldehyde were blocked by propranolol and phenoxybenzamine, respectively. In reserpinized dogs, ethanol progressively decreased both systemic arterial pressure and myocardial contractile force; with higher doses of ethanol (more than 3mg/ml) the heart rate was also decreased under this condition, while pulmonary arterial pressure increased. Because of the depleting action of reserpine on the catecholamines, it is

submitted that, since ethanol has a releasing effect on catecholamines, the increased cardiovascular activity after ethanol is probably the effect of the catecholamine action. With higher doses of ethanol, the cardiovascular depressant action of ethanol predominates. 24 references. (Author abstract modified)

**133305** Green, W.F.; Ireson, J.D. Department of Applied Biology, North East London Polytechnic, Barking Precinct, Longbridge Road, Dagenham, Essex, Great Britain **Pentobarbitone sleeping time after haloperidol and promethazine.** Archives Internationales de Pharmacodynamie et de Therapie (Ghent). 196(1):112-116, 1972.

The effects of pretreatment with promethazine and haloperidol on pentobarbitone sleeping time were studied in male mice of the Porton strain. The results showed that the pentobarbitone sleeping times of the test groups of animals were significantly shorter than those of the control group, indicating that haloperidol and promethazine are enzyme inducing agents. It is suggested that these drugs may act by causing an increase in the amount of enzyme synthesized together with a possible decrease in the rate of breakdown of the enzymes concerned. It is possible that the breakdown products, such as peptides, could control the rate of protein synthesis by a feedback inhibition. Anything which interfered with the breakdown could also increase the rate of synthesis by preventing feedback control. Such an effect could explain the similar effects of phenobarbitone, haloperidol (a buterophenone derivative), and promethazine (a phenothiazine derivative). 7 references.b

**133309** Eidelberg, E.; Bond, M.L. Division of Neurobiology, Barrow Neurological Institute of St. Joseph's Hospital and Medical Center, Phoenix, AZ 85013 **Effects of morphine and antagonists on hypothalamic cell activity.** Archives Internationales de Pharmacodynamie et de Therapie (Ghent). 196(1):16-24, 1972.

The cellular mechanisms by which morphine and its congeners affect hypothalamic functions were studied in rats to which morphine or an antagonist were administered i.v., while a microelectrode recorded the firing activity of single anterior hypothalamic neurones. The effects of morphine were observed in naive and in dependent adult, male Holtzman albino rats, as were the effects of naloxone. Precipitated abstinence was induced

in dependent rats by naloxone. Both morphinization and precipitated abstinence resulted in marked changes in the frequency and pattern of discharge of the majority of cells studied. Morphine, both in the naive and the tolerant dependent groups, caused major changes in the firing rate and pattern in most of the cells studied. While the mean firing rate was reduced in most of the naive rats and increased in most of the dependent group, the common characteristic was the shift from a near random distribution of spike intervals to a consistent pattern of bursts of multiple spikes separated by longer or shorter intervals in the naive and tolerant groups, respectively. It is suggested that the bursts were caused by morphine. This type of activity may be due to: recurring depolarizing excitatory events impinging upon hypothalamic cells, recurring inhibitory postsynaptic potentials gate the discharge of these neurons, or a combination of both. 15 references.

**133352** Hadass, H.; Kluwe, S.; Fahndrich, Ch. Institut für Neuropsychopharmakologie, Freie Universität Berlin, Ulmenalbe 30, 1 Berlin 19, Germany /Perazine and imipramine content in the tissues of rats of different ages./ Perazin- und Imipramingehalt in Geweben der Ratte verschiedenen Alters. *Pharmakopsychiatrie Neuropsychopharmakologie* (Stuttgart). 5(2):53-69, 1972.

The concentration of the neuroleptic drug, perazine, and the thymoleptic drug, imipramine, in liver, brain and blood of adult and senile laboratory rats was studied as a function of the administered dose as well as time of assay. The assay of the drugs in tissues was effected by a fluorometric method. When the Wistar albino rats were sacrificed 30 minutes after injection of drug, there was an almost linear relationship between the quantity injected and the blood, brain, and liver concentrations. In tissues of adult rats, the concentration was higher than in those of old rats. The injection of a single dose of drug (50mg/kg i.p.) is asymptomatic and appears in the blood of adult rats 12 hr and in old rats 24 hr after injection; it appears in the brain in both age groups 48 hr and in the liver, 72 hr after injection. In chronic administration, after 5 days, there is a more or less pronounced increase in drug concentration, particularly in the liver, which does not continue to rise. Thus, it is concluded that the drugs found in the organs are not a reflection of the drug effect in animals. 17 references.

**133474** Domino, Edward F.; Wilson, Ann E. Department of Pharmacology, University of Michigan, School of Medicine, Ann Arbor, MI 48104 Psychotropic drug influences on brain acetylcholine utilization. *Psychopharmacologia* (Berlin). 25(4):291-298, 1972.

The cholinergic antisyntesis agent, hemicholinium-3 (HC-3), was given intraventricularly to young male albino Holtzman rats, 20 to 30 days old, to deplete brain acetylcholine (ACh). The rate of HC-3 induced depletion of ACh was used as an index of ACh utilization. Total brain ACh was determined following various doses of chlordiazepoxide, pentobarbital, chlorpromazine, methotrimeprazine, imipramine, morphine, d-amphetamine, scopolamine, LSD-25, and phen-cyclidine given i.p. alone and after intraventricular administration of HC-3. It was found that psychotropic drugs have marked differential effects on the rate of HC-3 induced ACh depletion. 15 references. (Author abstract)

**133505** Chudina, E.Kh. Ministerstvo zdravookhraneniya R.S.F.S.R., Moskovskiy nauchno-issledovatel'skiy institut psikiatrii, kafedra psikiatrii, Moscow, USSR /Histoenzymologic studies of the brain tissues and internal organs of experimental animals in a singular administration of LSD-25./ Gistoenzimologicheskoye issledovaniye tkaney mozga i vnutrennikh organov eksperimental'nykh zhivotnykh pri odnokratnom vvedenii dietilamida lizerginovoy kisloty. *Zhurnal Nevropatologii i Psikiatrii Imeni S.S.Korsakova* (Moskva). 72(5):729-735, 1972.

Experiments were performed on 120 white male rats to study effects of the administration of LSD-25 on brain tissues and internal organs of the animals. LSD was introduced intraperitoneally in doses of 0.04 mg/kg. With the aid of the histochemical and microspectrophotometric methods it was demonstrated that disorders of mental activity are accompanied by changed activity of some enzymatic systems in the organism. LSD-25 influences the brain metabolism affecting mostly the oxidative processes in the Krebs cycle, and related to amino acid metabolism. In the studied parenchymatous organs (liver, kidney, heart) LSD-25 activated the oxidation of glutamic acid, increasing the degree of carbohydrate participation in the synthetic processes of lipid formation and at the same time decreasing activity of metabolite oxidation in the cycle of tricarboxylic acids. The most distinctive changes took place between the first and fourth hour of the experi-

ment. The observed changes produced by a single administration of LSD are reversible and superficial. 36 references. (Journal abstract modified)

**133526** Rogers, H.J. Department of Pharmacology, Guy's Hospital Medical School, London, S.E.1, England **Relationship between hypothermia and some chlorpromazine induced metabolic changes in mouse brain.** *Experientia* (Basel). 28(4):435-437, 1972.

The effects of chlorpromazine (CPZ) on the conversion of glucose into amino acids and its relationship to hypothermia are described. The study was conducted on female SAS/ICI albino mice who were given 20mg/kg CPZ i.p. and 5microCi (U-14C)-D-glucose i.p., after 30min; control animals received saline. The percentage incorporation of radioactivity into the trichloroacetic acid (TCA) fraction is markedly increased by CPZ during hypothermia and is reduced when body temperature is maintained. No significant changes in the absolute levels of some selected amino acids could be demonstrated after CPZ hypothermia. It is submitted that the increase in 14C in the TCA fraction is not due to its incorporation into amino acids. Thus the CPZ inhibition of cerebral protein synthesis is temperature dependent. 13 references.

**133527** Lemmer, B.; Kim, J.S.; Bak, I.J. Max-Planck-Institute für Hirnforschung, Neurobiologische Abteilung, D-6 Frankfurt-Niederrad a.M., Germany **Effect of 5-hydroxydopamine on uptake and content of serotonin in rat striatum.** *Experientia* (Basel). 28(4):439-441, 1972.

The similarity of action between 5-hydroxydopa (5-OH-dopa) and L-dopa is described. The serotonin (5-HT) content of the striatum was measured in male Sprague-Dawley rats after treatment with 5-OH-dopa, and the influence of 5-OH-dopamine on the uptake of tritiated serotonin by striatal tissue slices of the rats was studied in vitro. In vivo, treatment of the animals with 5-OH-dopa lowered the content of serotonin in the striatum of rat brains from 0.51 to 0.39microg/g wet weight. Addition of 5-OH-dopamine to the incubation medium significantly reduced the uptake of tritiated serotonin by striatal tissue; the inhibition of serotonin uptake was dose dependent. Interactions between the catecholamines, 5-OH-dopamine and dopamine, and the indoleamine, serotonin, are demonstrated by the uptake studies described. It is assumed that the decrease in the

uptake of 5-HT is not due to the inhibition of the uptake mechanism for 5-HT, but that displacement of serotonin by the catecholamines takes place at the storage sites. 13 references.

**133528** Winter, J.C. Department of Pharmacology, School of Medicine, State University of New York at Buffalo, Buffalo, NY 14214 **Xylamidinium tosylate: differential antagonism of the hypothermic effects of N,N-dimethyltryptamine, bufotenine, and 5-methoxytryptamine.** *Archives Internationales de Pharmacodynamie et de Therapie*. 198(1):61-66, 1972.

The effect of pretreatment with a fixed dose of xylamidinium tosylate on the hypothermia produced in rats by N,N-dimethyltryptamine (DMT), bufotenine, and 5-methoxytryptamine was determined. Such pretreatment had little effect on DMT-induced hypothermia but the effects of bufotenine and 5-methoxytryptamine were antagonized. Despite the hallucinogenic properties sometimes attributed to bufotenine, it may reasonably be assumed that, of the three compounds, only DMT enters the central nervous system of the rats in significant amounts. Therefore, the present results are in agreement with the hypothesis that xylamidinium acts selectively to block the peripheral component of the actions of tryptaminergic agents. 14 references. (Author abstract)

**133569** Kendel, K.; Beck, U.; Wita, C.; Hohnneck, E.; Zimmermann, H. Neurologische Universitäts-Klinik, Abteilung für Neurophysiologie, D-7800 Freiburg i.Br., Hansastrasse 9, Germany **Influence of L-dopa on night sleep in parkinsonian patients.** / *Der Einfluss von L-dopa auf den Nachtschlaf bei Patienten mit Parkinson-Syndrom.* *Archiv für Psychiatrie und Nervenkrankheiten* (Berlin). 216(1):82-100, 1972.

A study of the effect of L-dopa on the sleep pattern of Parkinson patients is presented. The significance of the difference in REM sleep in the first and second halves of the night is particularly emphasized, as well as the dependence of changes in night sleep upon the success of therapy. The evaluation of 40 records representing 24 patients, before L-dopa therapy, revealed more frequent and longer waking periods, a lower proportion of REM sleep and deep sleep, and disruption of the sleep sequence. L-dopa has various effects on these patients: those with a good clinical improvement show a definite tendency towards normaliza-



tion of their night sleep pattern; patients with slight or no improvement show a tendency towards exacerbation of their sleep pattern. The L-dopa effect is also dependent upon the dosage level and the duration of treatment. There was a definite increase in REM latency with L-dopa treatment, in patients showing clinical improvement, which was accompanied by a decrease in the REM proportion in the first half of the night. A slight increase was observed in the REM proportion (REM - rebound) in the second part of the night. The subjective impressions of the patients agreed with the objective findings. The constancy of tremor frequency during sleep was confirmed. 30 references.

133605 Roach, Mary K.; Khan, Myrna; Knapp, Marguerite; Reese, W.N., Jr. Division of Biochemistry, Texas Research Institute of Mental Sciences, 1300 Moursund Avenue, Houston, TX Ethanol metabolism in vivo and the role of hepatic microsomal ethanol oxidation. *Quarterly Journal of Studies on Alcoholism*. 33(3):751-755, 1972.

The role of microsomal enzymes in ethanol metabolism in vivo was investigated by examining the effect on blood ethanol disappearance of a combination of induction of the microsomal enzyme system and inhibition of alcohol dehydrogenase in the rat. The rate of blood alcohol disappearance was unaltered by the administration of agents that either enhance (phenobarbital, benzopyrene) or inhibit (aminotriazole) the microsomal ethanol oxidizing system even when the principal enzyme for ethanol oxidation, alcohol dehydrogenase, was inhibited by pyrazole. Microsomal ethanol oxidation thus appears to have little qualitative importance in ethanol metabolism in vivo. 14 references. (Author abstract modified)

133622 Fischer, E.; Heller, B. Hospital Nacion Jose T.Borda, Barracas 375, Buenos Aires, Argentina Phenethylamine as a neurohumoral agent in brain. *Behavioral Neuropsychiatry*. 4(3-4):8-13,21, 1972.

Phenethylamine is proposed as a brain neurohumoral agent with stimulant (ergotropic) action. Available experimental results favor such a hypothesis. It was shown that phenethylamine is present in brain and has a stimulant action on behavior. Reserpine depletes the brain of its phenethylamine content. This fact, together with the elimination of reserpine effects by

phenethylamine indicates that these effects are produced, at least partly, by phenethylamine depletion. A similar effect is produced by imipramine, a tricyclic antidepressant. As the latter does not inhibit monoamine oxidase, we assume that it favors phenethylamine production. Such a mechanism could explain its clinical antidepressive effect. In clinical depressions a diminished phenethylamine excretion was found, while in mania and schizophrenia, abnormally high amounts appeared in urine. All these observations are consistent with the hypothesis that phenethylamine is a physiological brain neurohumoral agent which exerts a stimulant action. 17 references. (Author abstract)

133672 Hoffmeister, F. Institut für Pharmakologie der Farbenfabriken Bayer AG, 56 Wuppertal 1, Germany /Electroencephalogram and behavior of rabbits in physiological and drug induced sleep: part III: influence of hypnotics on sleep behavior of rabbits; discussion and summary./ *Elektroenzephalogramm und Verhalten von Kaninchen im physiologischen und medikamentösen Schlaf*: 3.Mitteilung: Einfluss von Hypnotika auf das Schlafverhalten des Kaninchens; Besprechung der Ergebnisse und Zusammenfassung. *Arzneimittel-Forschung* (Aulendorf). 22(3):563-569, 1972.

The results of an investigation on the effects of hypnotics in rabbits are presented. Both behavioral and physiological (EEG) responses to cyclobarbitol, nitrazepam, and carbromal were assessed at various doses; the rest-activity cycle remained normal under the influence of nitrazepam, but unphysiological sleep was induced with the other two hypnotics. The fact that deviations in sleep pattern were observed during the day hours did not affect the constancy of the day-to-day results in any one rabbit over a 3-day period. The action of the different hypnotics varied: cyclobarbitol diminished the stage 1 EEGs and, in therapeutic doses, did not affect paradoxical sleep nor sleep rhythm to any great extent. Methypyrrolon, methaqualon, carbromal, and promethazine decrease the waking periods when compared with cyclobarbitol. During carbromal sleep, the characteristic interruptions of normal sleep are very greatly reduced. It is submitted that the efficacy of a hypnotic must be evaluated by a number of criteria which do not only apply to potency of the drug or duration of action, and that, due to specific differences in action of the



various hypnotics, different patients may require a specific hypnotic geared to their particular needs. 22 references.

**133708 Vernadakis, Antonia.** Departments of Psychiatry and Pharmacology, University of Colorado School of Medicine, Denver, CO. 80220 **Brain biochemical changes in rats treated with chlorpromazine and electroshocked during early postnatal development.** *Brain Research (Amsterdam)*. 42(2):403-411, 1972.

The activities of cerebral and cerebellar acetylcholinesterase (AChE), butyrylcholinesterase (BuChE), DNA, RNA and protein contents were studied in Sprague-Dawley female rats treated with chlorpromazine (6mg/kg body weight or 15mg/kg) either at 2 (CPZ-2 day) or 13 days (CPZ-13 day) after birth and electroshocked beginning at 12 days for the CPZ-2 day groups or 18 days for the CPZ-13 day groups. Both cerebrocortical and cerebellar BuChE were higher in all control shocked groups whereas only cerebellar DNA was higher as compared to nonshocked controls. Chlorpromazine treatment lowered only the cerebral BuChE activity but this effect was not apparent after electroshock. Although chlorpromazine alone did not affect DNA content in either the cerebral cortex or cerebellum, it prevented the rise of DNA induced by electroshock in the cerebellum. 20 references. (Author abstract)

**133713 Schmidt, M.J.; Hopkins, J.T.; Schmidt, D.E.; Robison, G.A.** Laboratory of Cerebral Metabolism, NIMH, Bethesda, MD 20014 **Cyclic AMP in brain areas: effects of amphetamine and norepinephrine assessed through the use of microwave radiation as a means of tissue fixation.** *Brain Research (Amsterdam)*. 42(2):465-477, 1972.

Microwave radiation (MWR) was used to sacrifice rats and rapidly fix the brain in situ. When rats were exposed to MWR the temperature of the brain quickly approached 90 degrees C and adenylyl cyclase and phosphodiesterase were totally and irreversibly inactivated in the brain. By using MWR as the method of sacrifice, enzymatic activity was arrested in situ and the brain could be accurately dissected and cyclic-AMP (adenosine 3',5'-monophosphate) concentrations determined in discrete regions. It was found that there was a differential distribution of cyclic-AMP in the rat brain with the cerebellum and brain stem containing the highest levels and the cortex and hip-

pocampus the lowest concentrations. Decapitation led to a fourfold increase in cyclic-AMP levels in the whole brain, but the increase in specific areas was not uniform. Administration of pentobarbital was associated with a reduction in the concentration of cyclic-AMP in all areas examined. Amphetamine did not change the nucleotide level in any brain area studied at the times tested. Similarly, direct injection of norepinephrine into the ventricular system of the brain also did not alter cyclic-AMP levels in any brain area. The inability of norepinephrine to increase AMP levels in the brain in vivo is in contrast to the marked rise in nucleotide concentrations produced in brain slices incubated in vitro in the presence of norepinephrine. 38 references. (Author abstract)

**133715 Segal, David S.; Knapp, Suzanne; Kuczenski, Ronald T.; Mandell, Arnold J.** Dept. of Psychiatry, Univ. of California at San Diego, La Jolla, CA 92037 **The effects of environmental isolation on behavior and regional rat brain tyrosine hydroxylase and tryptophan hydroxylase activities.** *Behavioral Biology*. 8(1):47-53, 1973.

Regional brain levels of tyrosine hydroxylase and tryptophan hydroxylase were determined in rats isolated for intervals of up to 16 days. The activity of midbrain and striatal tyrosine hydroxylase was found to be elevated in the isolated rats when compared to grouped controls. In contrast, septal tryptophan hydroxylase activity was significantly reduced and midbrain tryptophan hydroxylase remained unchanged. Animals isolated for as little as 5 days were found to exhibit an increased level of spontaneous motor activity. In addition, amphetamine induced behavioral excitation appeared to be additive with that produced by isolation. 23 references. (Author abstract)

**133727 Kennedy, J. Steve; Waddell, William J.** Department of Pharmacology and Dental Research Center, University of North Carolina, Chapel Hill, NC 27514 **Whole-body autoradiography of the pregnant mouse after administration of C14-delta9-THC.** *Toxicology and Applied Pharmacology*. 22(2):252-258, 1972.

The distribution of C14-delta9-tetrahydrocannabinol in pregnant A/JAX mice at 12 days of gestation was studied by whole-body autoradiography 0.33, 1, 3, or 24 hours after iv or 3 hours after sc administration. High concentrations of radioactivity were found after either iv or sc administration in liver, intestinal contents, Harders

gland, fat, corpora lutea, and adrenal cortex. The concentration was low in maternal brain and in the fetuses at all time intervals after injection. The fetal central nervous system had the highest concentration of all fetal tissues. The concentration was high in maternal lung and spleen after iv but not after sc administration. 16 references. (Author abstract)

133733 Smibert, Elizabeth; Liem, Ham Heng; Muller-Eberhard, Ursula. Department of Biochemistry, Scripps Clinic and Research Foundation, La Jolla, CA 92037 Studies on the induction of serum hemopexin by pentobarbital and polycyclic hydrocarbons. *Biochemical Pharmacology* (Oxford). 21(12):1753-1761, 1972.

A study was undertaken to evaluate the effect of starvation, pentobarbital, and 3-methylcholanthrene on hemopexin synthesis in male New Zealand white rabbits. Induction of the serum glycoprotein hemopexin by sodium pentobarbital and 3-methylcholanthrene was established. Serum hemopexin levels were assayed by a radial immunodiffusion technique. Hemopexin levels were increased up to 200% after repeated injections of pentobarbital, compared with control rabbits injected with saline or distilled water. Induction was confirmed by simultaneous administration of an inhibitor of protein synthesis, cycloheximide, which temporarily interrupted and delayed hemopexin induction. Other aspects of hemopexin synthesis studied were: the effect of starvation, which markedly reduced the serum levels; the combined action of pentobarbital and polycyclic hydrocarbons on induction, which was nonadditive; and the lack of response to repeated doses of 3-methylcholanthrene. 34 references. (Author abstract)

133741 Jones, G.; Pertwee, R.G. Department of Pharmacology, University of Oxford, Oxford OX1 3QT, England A metabolic interaction in vivo between cannabidiol and delta1-tetrahydrocannabinol. *British Journal of Pharmacology* (London). 45(2):375-377, 1972.

The effect of pretreatment with 50mg/kg of cannabidiol (CBD) on the distribution of radioactivity in the chromatograms of ethyl acetate extracts of the brains of mice injected with 1.0mg/kg of tritiated delta1-tetrahydrocannabinol (3H-delta1-THC) was determined. The pretreatment with CBD produced significant increases in the levels of radioactivity in the brain, which were as-

signed to delta1-THC and its centrally active metabolite 7-hydroxy-delta1-THC; the changes produced were 1.4 and 2 fold respectively. Pretreatment with CBD did not bring about any detectable change in the degree of catalepsy produced by the delta1-THC. The negative finding may have been due to the wide limits of error which were obtained in the bioassay. 7 references. (Author abstract)

133743 Winters, W.D.; Ferrar-Allado, Theresa; Guzman-Flores, C.; Alcaraz, M. Departments of Pharmacology and Family Practice, University of California School of Medicine, Davis, CA 95616 The cataleptic state induced by ketamine: a review of the neuropharmacology of anesthesia. *Neuropharmacology* (Oxford). 11(3):303-315, 1972.

The neuropharmacological properties of ketamine on the behavior, EEG and multiple unit activity of 16 adult female unrestrained cats was studied. There is a multidirectional continuum of anesthetic states, some represented by CNS excitation and others by depression. The reticular activating system is influenced by all anesthetics, some inhibiting its action (Stage III) and some hyperexciting the system which results in a functional disorganization (Stage II C). In both cases the result is a loss of the arousal response. Some agents, such as diethyl ether, traverse both excitation and depression (Stages I, II, III); others, including trichlorethylene, nitrous oxide, gamma-hydroxybutyrate, phencyclidine, and ethrane, induce catalepsia (Stage II); still others, i.e. halothane and the barbiturates, progress directly from the excitement of Stage I to Stage III. Cataleptic agents such as gamma-hydroxybutyrate, phencyclidine, trichlorethylene, and ethrane may induce further CNS excitation as manifested by seizures. Surgical anesthesia may be functionally defined as a state induced by a drug which makes the patient amnesic and relatively unresponsive to painful stimuli. Thus the patient does not respond during surgery and cannot recall what happened. This can be achieved by CNS stimulation or depression. The anesthetic state induced by ketamine can be described as cataleptic. 15 references. (Author abstract modified)

133745 Chaturvedi, A.K.; Chaudhari, A.; Parmar, Surendra S. Department of Pharmacology and Therapeutics, King George's Medical College, Lucknow University, Lucknow-3, India Sub-

**stituted 3,4,5-trimethoxybenzamides: correlation between inhibition of pyruvic acid oxidation and anticonvulsant activity.** *Journal of Pharmaceutical Sciences.* 61(7):1157-1160, 1972.

Several 3,4,5-trimethoxybenzamides were synthesized and evaluated for their inhibitory effects on the oxidation of pyruvic acid by rat brain homogenate. It was found that N-cyclohexyl-N-substituted 3,4,5-trimethoxybenzamides were able to inhibit this oxidation and that inhibition increased as a function of the increase in concentration of these trimethoxybenzamides. In addition, all the 3,4,5-trimethoxybenzamides were found to possess anticonvulsant properties and almost all produced mortality within 24 hours. The anticonvulsant effects, however, were found to be in no way related to the ability of the trimethoxybenzamides to inhibit the oxidation of pyruvic acid. 17 references.

**133750** Zigmond, Michael J.; Stricker, Edward M. Psychobiology Program, Departments of Biology and Psychology, University of Pittsburgh, Pittsburgh, PA 15213 **Deficits in feeding behavior after intraventricular injection of 6-hydroxydopamine in rats.** *Science.* 177(4055):1211-1214, 1972.

Intraventricular injections of 6-hydroxydopamine produced 95% depletion of telencephalic norepinephrine and 62% depletion of striatal dopamine in male, Sprague-Dawley, albino rats. Treated rats maintained body weight at subnormal levels and failed to increase food intake in response to a short-term decrease in glucose utilization. After treatment with the monoamine oxidase inhibitor pargyline, 6-hydroxydopamine produced no further norepinephrine depletion but increased the dopamine depletion to 95% and produced complete aphagia. These effects are comparable to events that follow bilateral electrolytic lesions of the lateral hypothalamus. 21 references. (Author abstract)

**133751** Galatulas, I.; Martini, M.; Pomarelli, P.; Piccinini, F. Department of Pharmacology, University of Milan, Milan, Italy **Effect of drugs on the calcium exchangeability in the pineal gland.** *Archives Internationales de Pharmacodynamie et de Therapie (Ghent).* 196(Supplement):177-178, 1972.

Adult and prepubescent male Sprague-Dawley rats were given an intracarotid injection of 1ml/kg

of Tyrode containing calcium, and the total calcium and exchangeable calcium contents of the animals pineal glands were measured. It was found that the amounts of both total and exchangeable calcium were higher in the immature rats than in the mature animals. The animals were then injected with either 10mg/kg s.c. of amphetamine or 25mg/kg s.c. of phenobarbital. It was found that the amounts of total and exchangeable calcium markedly increased in the amphetamine stimulated animals and that they decreased in the anesthetized animals. 6 references.

**133763** Mitra, Chhanda; Guha, S.R. Indian Institute of Experimental Medicine, Calcutta, India **Intracellular localization and co-factor requirement of amphetamine-tetrazolium reductase of guinea-pig brain.** *Biochemical Pharmacology (Oxford).* 21(14):1897-1905, 1972.

The results of an investigation of the intracellular distribution of an active dehydrogenase, amphetamine-tetrazolium reductase (amphetamine dehydrogenase), and its cofactor requirement in the guinea pig brain are presented. Amphetamine dehydrogenase is localized in the crude mitochondrial fraction, and the addition of a soluble supernatant fraction or extra added triphosphopyridine nucleotide (NADP) is necessary for full activity supplementation. The cofactor present in the supernatant fraction is heat stable and dialysable. The pH activity curve of the crude mitochondrial system shows two maxima, the peak in the alkaline region being more elevated than that observed at pH 7.0. The optimal concentrations of neotetrazolium chloride (NTC) and NADP are 0.5mg/ml and 200-300microg/ml of the reaction mixture, respectively; higher concentrations of NTC inhibit the enzyme activity slightly, whereas any further increase in the NADP concentration results in no further increase in diformazan production. The Km values for d-amphetamine and NADP under the employed experimental conditions are 0.00166M and 0.000133M respectively. The crude mitochondrial enzyme is inhibited by potassium cyanide (KCN) in the presence of supernatant or NADP, the inhibition by KCN being reversed by dialysis or by increasing the amount of NADP. The enzyme activity is also inhibited by metal chelating agents, suggesting the possible involvement of a metal ion. 12 references. (Author abstract modified)



**133767** Herblin, W.F. Central Research Department, E.I. du Pont de Nemours & Company, Wilmington, DE 19898 **Amantadine and catecholamine uptake.** *Biochemical Pharmacology* (Oxford). 21(14):1993-1995, 1972.

A study was undertaken to examine the effects of amantadine on the uptake of norepinephrine and dopamine by synaptosomes from the striatum and the hypothalamus of normal and reserpinized rats. The effects of amantadine on serotonin uptake were also determined. Amantadine was found to inhibit the uptake of norepinephrine by both striatal and hypothalamic synaptosomes, although it was about twice as potent against the hypothalamic system. Reserpination had little effect on either the absolute amount of uptake observed or the extent of inhibition by amantadine. The only inhibition of dopamine uptake seen was with hypothalamic synaptosomes from nonreserpinized rats. Reserpination did not affect uptake or inhibition in the striatal system but seemed to reduce both uptake and inhibition in the hypothalamic system. Serotonin was taken up by forebrain synaptosomes in a time dependent manner. The complete lack of effect of 0.0001M of amantadine on dopamine uptake by striatal synaptosomes argues strongly against its involvement in the mechanism of the antiparkinson activity of this drug. Amantadine does inhibit the uptake of norepinephrine, particularly into hypothalamic synaptosomes, and the lack of effect of reserpine pretreatment suggests that this is a direct effect on the membrane process itself. However, the effects of a normal dose of the drug would probably be minimal unless parkinsonian patients exhibit a greatly increased sensitivity. 15 references.

**133943** no author. no address **Marijuana effects on neurons in tissue culture.** Progress Report, NIMH Grant MH-20099, 1973, 7 p.

Studies of the effects of marihuana on neurons in tissue culture produced the following results: cerebral, cerebellar, cord, ganglion and muscular tissue grew in enriched media for prolonged periods; when cord and ganglion and cord and muscle tissues were grown together, they had a reciprocally stimulating effect on each other's rate of growth as measured by neurite growth and duration of normal cellular characteristics; in cord muscle explants, the occurrence of spontaneous contractions were observed in the muscles; when ganglia and cord tissues were cultured together or

ganglia were cultured alone, there was a faster rate of neurite migration as well as cell migration from the ganglionic explant; on a few occasions it was possible to impale a ganglionic neuron and obtain an action potential in response to a depolarizing pulse. These preliminary studies indicate the feasibility of carrying out further pharmacologic studies with drugs such as tetrahydrocannabinol (THC), morphine, and the amphetamines.

**133958** Popova, E. N.; Vavilov, A. M.; Krivitskaya, G. N.; Tumanov, V. P. Institut mozga AMN SSSR, Moscow /Changes in the neurons of certain sections of the rat brain during motor stimulation induced by phenamine./ *Izmeneniya neyronov nekotorykh otdelov mozga krys pri dvigatel'nom vozbuzhdenii, vyzvannom fenaminom. Byulleten' Eksperimental'noy Biologii i Meditsiny* (Moscow). 73(3):108-111, 1972.

Phenamine which has a stimulating effect on the central nervous system of which caused by direct action on the adrenergic systems of the brain, was used to determine the morphological indices of intensified neuron functioning in the rat brain. The nuclei and neuronal bodies in the subcortical portions of the brain rich in catecholamines (caudate nucleus, dorsomedial nucleus of the hypothalamus) enlarged with the maximum stimulating effect of phenamine after administration of low (1mg/kg of body weight) and medium doses (2.5mg/kg). An increase of dosage to 10mg/kg produced the same enlarging effect in the cerebral cortex. The intracellular structure of the neurons was also altered along with the in development of motor stereotypy. It is suggested that the parts of the brain rich in adrenergic structures are predominately active in reserpine stimulation. 17 references. (Journal abstract modified)

**133959** Chekman, I. S. Kafedra farmakologii Kiyevskogo meditsinskogo instituta, Kiev /Experimental studies on the mechanism of reserpine action./ *Eksperimental'nyye issledovaniya po mekhanizmu deystviya rezepina. Byulleten' Eksperimental'noy Biologii i Meditsiny* (Moscow). 73(3):59-61, 1972.

The effect of reserpine on catecholamine content and level of adenil nucleotides was studied and the problem of how this effect combines with that of reserpine on the key enzymes of the respiratory tract, which determine the intensity of processes of biological oxidation and formation of



ATP, was investigated. Reserpine (2.5mg/kg of body weight) reduced catecholamine content in the myocardium and simultaneously depressed the activity of cytochrome-c oxidase and succinate dehydrogenase, but did not alter the content of adenosine triphosphoric, adenosine diphosphoric and adenosine-5'-phosphoric acids. Unithiol diminished the depleting effect of reserpine on noradrenalin content in the rat myocardium. It is concluded that reserpine disrupts the bond between biogenic amines and adenosine triphosphoric acid. 16 references. (Journal abstract modified)

**133961** Hotovtseva, O. P.; Parkhomets', P. K. Instytut biokhimiyi Akademiyi nauk Ukrayins'koyi RSR, Kiev /Effect of melipramine on the serotonin content in the brain of reserpinized rats./ Vpliv melipraminu na vmist serotoninu v mozku rezepinizovanykh shchuriv. Ukrayins'kyy Biokhimichnyy Zhurnal (Kiev). 44(1):105-107, 1972.

The effect of melipramine (50mg/kg) on the content and absorption of serotonin in the rat brain after depletion of the reserves of this amine by reserpine (2mg/kg) was investigated. Melipramine induces rapid accumulation of serotonin in the rat brain under such experimental conditions. Within 15 min after injection of the drug into the animal, serotonin content in the brain increased 2.7times compared to the content in the brain of rats receiving reserpine alone. Administration of serotonin to reserpinized rats after preliminary injection of melipramine induced an increase in amine concentration in the brain by 43% and 32%, respectively, within 1-1.5hrs compared to its concentration after administration of melipramine alone. Administration of serotonin to the animals within 4.5hrs after preliminary injection of melipramine was not accompanied by any reliable change in the content of this amine in the brain compared to data of experiments in which melipramine alone was administered to rats. 11 references. (Journal abstract modified)

**134043** Blum, Kenneth; Wallace, Jack E.; Geller, Irving. Dept. of Pharmacology, University of Texas Medical School, San Antonio, TX Synergy of ethanol and putative neurotransmitters: glycine and serine. Science. 176(4032):292-294, 1972.

The putative neurotransmitters, glycine and serine, significantly enhanced the sleeping time (loss of the righting reflex) that was induced by

ethanol in mice. The observed synergistic effect between ethanol and the amino acids is probably not related to an alteration of ethanol metabolism, but rather to an interaction of these compounds in the central nervous system. 15 references. (Author abstract)

**134457** Bondarenko, T. T. Laboratoriya psikhofarmakologii V. P. Serbskogo Ministerstvo Zdravookhraneniya SSSR, Moscow /Interaction of the effect of lysergic acid diethylamide and aminazine at the level of individual neurons of the midbrain reticular formation./ Vzaimodeystviye effekta dietilamida lizerginovoy kisloty i aminazina na urovne otdel'nykh neyronov retikulyarnoy formatsii srednego mozga. Byulleten' Eksperimental'noy Biologii i Meditsiny (Moskva). 74(11):44-47, 1972.

White male rats were used in a study of the interaction of the effect of lysergic acid diethylamide (LSD) and chlorpromazine at the level of the individual neurons of the reticular formation of the midbrain. The same neurons of the midbrain reticular formation appeared to be able to react both to LSD and chlorpromazine. Evidently a complicated interaction between the effects of the two drugs is realized at the level of these neurons. Chlorpromazine was found to influence both the inhibitory and the facilitating effects of LSD antagonistically as well as synergistically. It was concluded that an adrenergic component is present in the action mechanism of LSD on the central nervous system. 19 references. (Author abstract modified)

#### 04 MECHANISM OF ACTION: BEHAVIORAL

**118931** Himwich, Williamina A.; Davis, Jimmie M.; Forbes, Donna; Glisson, Silas N.; Magnusson, Tor; Stout, Marguerite A.; Trusty, Dewey M. Thudichum Psychiatric Research Laboratory, Galesburg State Research Hospital, Galesburg, IL Indole metabolism and behavior in dog. Biological Psychiatry. 4(1):51-63, 1972.

Determinations of amino acids were made in blood and brain in normal dogs and in dogs with transposition of the portal vein and the vena cava or Eck fistula both before and after the administration of a monoamine oxidase inhibitor (MAOI) (tranylcypromine) and L-tryptophan. Behavioral observations and EEG studies were also made. In animals with Eck fistulas the administration of tranylcypromine and L-tryptophan reduced sig-

nificantly the previously increased blood levels of total alpha-amino nitrogen and urea; in brain the levels of glutamine, glutamic acid and cystathionine were elevated. The animals exhibited excitement and marked hyperactivity for a period of 3 to 4 hours. Electrical activity of the brain as measured by the EEG was greatly augmented. 18 references. (Author abstract)

**119048** Nakamura, K.; Kuntzman, R.; Maggio, A.; Conney, A.H. Department of Biochemistry and Drug Metabolism, Hoffmann-La Roche Inc., Nutley, New Jersey 07110 **Effect of 6-hydroxydopamine on catecholamine concentrations and behavior in the morphine-tolerant rat.** *Journal of Pharmacy and Pharmacology* (London). 24(6):484-487, 1972.

Male Wistar rats were maintained on twice daily doses of 80mg/kg morphine, after which they were given 6-hydroxydopamine (6-OHDA) and sacrificed after various intervals. The intraventricular administration of 6-OHDA caused a marked depletion of brain noradrenaline in both the control and experimental rats, while, in the control rats, it increased the levels of brain dopamine. This transient increase in encephalic dopamine may have been due to interruption of an axoplasmic transport of monoamine granules from the cell bodies to the terminals. In the rats previously treated with morphine, the 6-OHDA caused a decrease in the encephalic levels of dopamine. However, chronic treatment with morphine inhibited the depletion of brain dopamine by 6-OHDA; chronic morphine treatment did not affect the depletion of brain noradrenaline following the administration of 6-OHDA. The intraventricular administration of 6-OHDA to rats causes increased irritability which the acute administration of morphine does not prevent; chronic morphine treatment does, however, cause a significant decrease in 6-OHDA induced irritability. Although the mechanism by which chronic morphine treatment inhibits the activity of 6-OHDA on the dopaminergic neurons is unknown, the results of this study suggest that chronic treatment with morphine may induce changes in the uptake process of the nigrostriatal system, thereby eventually inhibiting the uptake of 6-OHDA. 20 references.

**119058** Fuller, Ray W.; Molloy, Bryan B.; Roush, Betty W.; Hauser, Kenneth M. Lilly Research Laboratories, Eli Lilly and Company,

Indianapolis, IN 46206 **Disposition and behavioral effects of amphetamine and beta,beta-difluoroamphetamine in mice.** *Biochemical Pharmacology* (Oxford). 21(9):1299-1307, 1972.

Beta,beta-difluoroamphetamine, which has a lower pK value than amphetamine and so exists at physiological pH predominantly as a neutral molecule rather than as a cation, localized in epididymal fat to a greater degree than in brain in mice, in contrast to amphetamine. Difluoroamphetamine had a much shorter half-life in brain (19 min) than did amphetamine (51 min), and the half-life was not affected by a 4-chloro substituent (18 min), in contrast to that of amphetamine (261 min for 4-chloroamphetamine). The half-life of difluoroamphetamine and of 4-chloro-difluoroamphetamine was essentially the same in fat as in brain (16 and 20 min respectively). Due to its different distribution and its shorter half-life, difluoroamphetamine had to be given at higher doses to maintain brain levels comparable to those of amphetamine. Likewise, higher doses of the difluoroamphetamine were required for equivalent degrees of central nervous system (CNS) stimulation as measured by increased locomotor activity. The duration of CNS stimulation was shorter for difluoroamphetamine than for amphetamine, correlating with the more rapid removal of the former compound from brain. Two inhibitors of microsomal drug-metabolizing enzymes, 2,4-dichloro-6-phenylphenoxyethylamine (DPEA) and beta-diethylaminoethylidiphenylpropylacetate (SKF 525-A), caused increased brain levels of difluoroamphetamine but not amphetamine, and desmethylinipramine (DMI) did not affect brain levels of either drug. The results suggest an alteration in metabolism as well as in tissue distribution resulting from the decreased basicity of the beta,beta-difluoro compound. 11 references. (Author abstract)

**119173** Geller, Irving; Hartmann, Roy J.; Blum, Kenneth. Department of Experimental Pharmacology, Southwest Foundation for Research and Education, San Antonio, Texas **The effects of low-dose combinations of d-amphetamine and cocaine on experimentally induced conflict in the rat.** *Current Therapeutic Research*. 14(4):220-224, 1972.

Six male albino rats, approximately 90 days old, were gradually reduced to 80% of their body weight and placed in a controlled shock inducing environment where they obtained food by a lever

operated system. Cocaine hydrochloride and d-amphetamine sulfate were administered. During the course of the experiment a rather dramatic intensification of conflict was observed following the simultaneous administration of relatively small doses of amphetamine and cocaine. The finding of this experiment suggests a probable cocaine - amphetamine potentiation since combinations of relatively low doses of the agent produced effects which were generally greater than additive. The possibility that the intensified conflict might be related to the blocking of norepinephrine uptake in tissues is suggested. The findings are important in that they point out the potential dangers of indiscriminate poly drug usage of amphetamine and cocaine. 8 references.

**119442 Daniels, Denver.** Psychology Department, University of Exeter, Washington Singer Laboratories, Exeter, Devon, England **Effects of acetoxycycloheximide on appetitive learning and memory.** Quarterly Journal of Experimental Psychology (Cambridge). 24(1):102-114, 1972.

The effects of direct brain infusion of acetoxycycloheximide (an inhibitor of protein synthesis; ACXH) on acquisition, storage and recall of memory for one trial appetitive learning were examined in five experiments. ACXH was infused into the rats' hippocampi through implanted canulas. Control subjects received an equal volume of physiological saline. ACXH was infused (1) five hr before acquisition, (2) five hr before commencement of recall tests, and (3) immediately after acquisition. Each subject's general motor activity was recorded during testing. The results indicate that (1) ACXH has similar effects on appetitive and avoidance learning; (2) ACXH administered immediately after acquisition, has no effect on memory; (3) at four hr after acquisition memory is affected by ACXH; (4) short-term memory is unaffected by ACXH and can exist independently of long-term memory; and (5) ACXH consistently reduces general motor activity. 16 references. (Author abstract)

**119464 McKinney, William T., Jr.; Suomi, Stephen J.; Harlow, Harry F.** author address not given **How they're using monkeys to study depression.** Resident and Staff Physician. 18(2):44-49, 1972.

A broadly based research program designed to create monkey models for behavioral disorders was instituted. The principal focus has been on

depression and the goal has been to produce stable depressive syndromes in rhesus monkeys. Depression in monkeys is induced mainly by 2 methods, separation of infant monkeys from their mother and separation among sibling monkeys reared without a mother. The effects of separation on resulting depressive states of monkeys are described. Another approach is to induce a depressive-like syndrome or to alter the monkeys' social behavior through the use of drugs. Reserpine causes social withdrawal, decreases in locomotion and increases in huddling among monkeys. There are also physiological side effects of the drug, as in humans.

**119981 Masur, Jandira; Martz, Regina M. W.; Carlini, E. A.** Departamento de Biogimica e Farmacologia, E scola Paulista de Medicina, Sao Paulo, Brazil **The behavior of worker and non-worker rats under the influence of (-)-delta(9)-trans-tetrahydrocannabinol, chlorpromazine and amylobarbitone.** Psychopharmacologia (Berlin). 25(1):57-68, 1972.

The effects of (-)-delta(9)-trans-tetrahydrocannabinol, chlorpromazine and amylobarbitone on the labor division achieved by rats were studied. While the first 2 drugs in the doses of, respectively, 5.0 and 3.0 mg/kg, induced an inversion in the social pattern, amylobarbitone was ineffective at doses of 10.0 and 20.0 mg/kg; labor division of rats trained under a continuous reinforcement schedule was more sensitive to the drugs effects than that of animals under a VI schedule of reinforcement. Results were discussed in terms of a drug induced deconditioning effect without loss of motivation. 22 references. (Author abstract)

**119982 Maser, Jack D.; Hammond, L. J.** Department of Psychology, Tulane University, New Orleans, Louisiana 70118 **Disruption of a temporal discrimination by the minor tranquilizer, oxazepam.** Psychopharmacologia (Berlin). 25(1):69-76, 1972.

Minor tranquilizers typically fail to facilitate learned behaviors suppressed by conditioned emotional response or punishment. However, this study found a disruption of a temporal discrimination (Pavlovian inhibition of delay) based on conditioned suppression. After 230 trials for 9 rats, greatest suppression occurred at the end of the conditioned stimulus (inhibition of delay). Drug, but not saline, disrupted this discrimination, and the data were interpreted in terms of Pavlovian

excitation and inhibition. 12 references. (Author abstract)

**120009** Dewsbury, Donald A.; Davis, Henry N., Jr.; Jansen, Paul E. Dept. of Psychology, College of Arts and Sciences, Univ. of Florida, Gainesville, Fla. 32601 **Effects of monoamine oxidase inhibitors on the copulatory behavior of male rats.** *Psychopharmacologia* (Berlin). 24(2):209-217, 1972.

Five experiments were conducted in order to assess the effects of monoamine oxidase inhibitors on the copulatory behavior of male rats. Copulatory behavior was studied after administration of a) 3 injections of 25 mg/kg iproniazid, b) single injections of 50 and 100mg/kg iproniazid, c) single injections of 50 and 100mg/kg nialamide, and d) single injections of 25 and 50mg/kg pargyline. All treatments produced some retardation of copulatory behavior, although not all measures were affected by all drugs. A total of 21 statistically significant effects appeared. All were in the direction of retardation. Results are consistent with the hypothesis that high brain monoamine levels inhibit copulatory behavior in male rats. 28 references. (Author abstract)

**120013** Ahlenius, Sven; Engel, Jorgen. Dept. of Pharmacology, Univ. of Gothenburg, Fack, S-40033 Gothenburg 33, Sweden **Effects of a dopamine (DA)-beta-hydroxylase inhibitor on timing behaviour.** *Psychopharmacologia* (Berlin). 24(2):243-246, 1972.

The behavioral effects of the dopamine (DA)-beta-hydroxylase inhibitor bis-(4-methyl-1-homopiperazinylthiocarbonyl)-disulfide (FLA-63) were investigated using an operant conditioned behavior: differential reinforcement of low rates (DRL). The effects of FLA-63 on the timing behavior induced by the DRL schedule were similar to the effects of d-amphetamine, and consisted of a shortening of the interresponse times. It is suggested that a timing behavior like DRL might be a suitable model for testing the ability of different drugs to induce stereotyped behavior. The results indicate that central DA plays an important role in the behavioral changes observed. 11 references. (Author abstract)

**120014** Molinengo, L.; Ricci-Gamalerio, S. Istituto di Farmacologia e Farmacognosia, Facoltà di Farmacia, Corso Raffaello 31, I-10125-Torino, Italy **The action of imipramine, amitrip-**

**tyline, doxepin and butriptyline in an operant conditioning schedule.** *Psychopharmacologia* (Berlin). 24(2):247-257, 1972.

The behavioral action of imipramine, amitriptyline, doxepin and butriptyline was studied in an operant conditioning program composed of 2 concurrent schedules, one food reinforced and the other an avoidance schedule. The possibility that the position (near or far from the food tray) of the 2 levers in the cage may affect drug behavioral action was investigated. Tricyclic antidepressants caused a dose dependent depression of the food reinforced responses; the avoidance reflex was slightly depressed at the highest doses only. This pattern of antidepressive activity was compared with the patterns obtained in the same test with other central nervous system agents. 36 references. (Author abstract)

**120016** Bauer, Richard H. Dept. of Psychology, Univ. of Houston, Houston, Tex. 77004 **Twenty-four hour proactive facilitation of avoidance and discrimination by pentylenetetrazol.** *Psychopharmacologia* (Berlin). 24(2):275-295, 1972.

A series of experiments was conducted to determine if single or multiple injections of pentylenetetrazol, given 24 h apart, would facilitate acquisition when training was given 24 h after the last injection. In Experiment 1 female Wistar rats were injected with saline, 10, 20, or 30mg/kg, for 1, 10, or 20 days and trained in a shuttle box avoidance task. In Experiment 2 female Wistars received handling, a needle insertion into the i.p. cavity, a saline injection, or 10mg/kg, for 20 days. Results from both studies indicated that rate of acquisition and asymptotic performance were increased by pentylenetetrazol. In Experiment 3 male Wistars were injected with saline, 10, 20, or 30mg/kg of pentylenetetrazol for 1, 10, or 20 days and given light - dark discrimination training 24 h after the last injection. The results showed that 20 drug injections facilitated acquisition. In Experiment 4 male Long-Evans rats were injected with saline, 10, 20, or 30mg/kg for 20 days and then given light - dark discrimination training. The following day they received over training and the next day reversal training. Results indicated that original learning and reversal learning were facilitated by the drug. 30 references. (Author abstract modified)

**120017** Maj, Jerzy; Sowinska, Helena; Baran, Leokadia. Institute of Pharmacology, Polish



Academy of Sciences, 52 Ojcowska, Kraków, Poland The effect of amantadine on motor activity and catalepsy in rats. *Psychopharmacologia* (Berlin). 23(2):296-307, 1972.

The effect of amantadine on motor activity was investigated in rats. The compound was used at doses which antagonized the catalepsy induced by spiroperidol, triperidol, chlorpromazine and reserpine. These doses moderately stimulated motor activity in normal rats; their activity was effectively antagonized by spiroperidol, chlorpromazine, phenoxybenzamine but only slightly, if at all, by alpha-methyltyrosine, dimethyldithiocarbamate and reserpine. The behavioral effects of amantadine in normal and reserpinized rats were potentiated by L-Dopa, nialamide, desipramine and, in particular, by cocaine. The cocaine induced potentiation of the amantadine effect was prevented by spiroperidol. Alpha-methyltyrosine did not influence the antagonism of amantadine towards spiroperidol induced catalepsy. Noradrenaline and dopamine levels in the whole brain and dopamine levels in the corpus striatum were unaltered by amantadine. The main mechanism of action of amantadine appears to be the activation of central dopamine receptors. 25 references. (Author abstract)

120018 McCarroll, James E.; Korbel, Susan F. Dept. of the Army, Biomedical Research Laboratory, Edgewood Arsenal, Md. 21010 Magnesium pemoline: effects of a broad range of doses on water maze performance. *Psychopharmacologia* (Berlin). 24(2):308-317, 1972.

The effects of a broad range of doses of magnesium pemoline on rat performance in a water maze was investigated. Sixty rats were given doses of 20, 60 or 100mg/kg of magnesium pemoline or a placebo. They were tested (1 trial a day) for 21 days of drug treatment and for 10 days of no treatment. It was found that drug treated animals had a significantly lower total time in the maze on some days of the experiment; however, the swimming time of the drug groups was often higher than that of the placebo group. Experimental subjects also made more errors and had higher percentages of swimming time than placebo treated subjects. The number of errors and percent swimming time increased with increasing drug doses. Drug treated subjects had higher activity scores and less weight gain than placebo subjects. The weight changes were reversed after drug treatment was discontinued. 28 references. (Author abstract modified)

120019 Benkert, O.; Kohler, B. Psychiatrische Klinik der Universität München, D-8000 München 15, Nussbaumstr. 7, Germany Intrahypothalamic and intrastriatal dopamine and norepinephrine injections in relation to motor hyperactivity in rats. *Psychopharmacologia* (Berlin). 24(2):318-325, 1972.

High doses of dopamine and norepinephrine injected directly into the striatum and hypothalamus induced motor hyperactivity in rats. The motor activity recorded on the Animex for a period of 60 min after injection of norepinephrine into the hypothalamus, showed a significant increase in comparison with the controls. The increase in motor activity after dopamine (intrahypothalamic) and norepinephrine and dopamine (intrastriatal) was distinctly lower, although there was an initial large increase of motor activity after intrastrially injected dopamine. Pre treatment with reserpine or parachlorophenylalanine (intraperitoneal injection) to lower the serotonin level in the brain, followed by intracerebral injection of norepinephrine or dopamine failed to produce fighting or mounting behavior. 12 references. (Author abstract)

120097 Calhoun, William H.; Grant, Michael J. Univ. of Tennessee, Knoxville, TN 37916 Preinjection time of scopolamine and step-down latency in mice. *Psychonomic Science*. 26(1):39-40, 1972.

The effect of scopolamine on performance of mice was determined for varying preinjection intervals with step down passive avoidance. Ss which received the drug immediately before the test performed normally, while performance was impaired for Ss given the test 5 or 10 min postinjection. When these Ss were retested without the drug, performance was normal. Trained mice that were given the drug showed the same drug dependent performance as mice drugged throughout acquisition. These data may be relevant to theoretical notions about the effect of anticholinergic drugs on consolidation. 9 references. (Author abstract)

120103 Johnson, Deborah B.; Anderson, Carol; Khalili, Jamshid; Beatty, William W. North Dakota State Univ., Fargo, ND 58102 Effects of atropine on performance of an S(D)-S(Delta) discrimination in rats. *Psychonomic Science*. 26(1):23-24, 1972.

The effects on rats of atropine on performance of an S(D) - S(delta) discrimination under condi-

tions where the influence of the cue could be directly evaluated were examined. When a buzzer was used as the discriminative stimulus, atropine sulfate impaired performance of an established S(D) - S(delta) discrimination by increasing response rates during S(delta) periods. Atropine methylnitrate did not have this effect, suggesting that the behavioral effect of atropine sulfate resulted from its antagonism of a central cholinergic inhibitory system. The importance of selecting a neutral cue in studies of anticholinergic drugs is discussed. 7 references. (Author abstract modified)

**120219** Hughes, R. N. Department of Psychology, University of Canterbury, Christchurch 1, New Zealand **Methylphenidate induced inhibition of exploratory behavior in rats.** *Life Sciences*. 11(4):161-167, 1972.

Male and female rats were individually observed in an exploration box following intraperitoneal injections of saline, 8.0mg/kg or 16.0mg/kg bodyweight of methylphenidate hydrochloride. The drug decreased exploration, as measured by preferences for the novel half of the apparatus, but increased locomotor activity and rearing. However, sex of the rats did not play any part in the results. Findings were discussed in terms of the procedure, age of the rats and theories of arousal. 17 references. (Author abstract)

**120556** Ahlers, Robert H.; Best, Phillip J. Dept. of Industrial Engineering, North Carolina State Univ., Raleigh, NC 27607 **Retrograde amnesia for discriminated taste aversions: a memory deficit.** *Journal of Comparative & Physiological Psychology*. 79(3):371-376, 1972.

The nature of experimentally induced retrograde amnesia (RA) for discriminated taste aversions was investigated in rats. The experiment investigated: 1) whether the RA phenomenon is general enough to include a paradigm involving interoceptive stimuli; 2) whether RA is the result of a memory deficit, performance variables, or the punishing effects of the RA treatments; and 3) whether RA is caused by a memory deficit, an erasure of the stimuli in memory, or disruption of the associative band linking them. An amnesia agent (Metrazol) was administered in a discriminated taste aversion paradigm, either within or after the conditional stimulus (CS) - unconditional stimulus (US) interval. RA resulted in both cases, but was stronger when induced after the

US. Due to the nature of the discriminated avoidance paradigm used, the RA could not be explained in terms of the punishing effects of the RA treatment or general disinhibition. The data indicated that an amnesic treatment causes a memory deficit, at least part of which is due to the disruption of the CS trace. 20 references. (Author abstract modified)

**120560** Newman, L. Michael. Dept. of Pharmacology, Univ. of Michigan Medical School, Ann Arbor, MI 48104 **Effects of cholinergic agonists and antagonists on self-stimulation behavior in the rat.** *Journal of Comparative & Physiological Psychology*. 79(3):394-413, 1972.

The effects of cholinergic agonists and antagonists on self-stimulation behavior in the rat were investigated. Rats trained to press a bar for electrical stimulation of the brain on a 30 sec variable interval schedule were tested weekly with one or more of the following drugs: physostigmine, neostigmine, atropine, methylatropine, scopolamine, pilocarpine, nicotine, mecamylamine, and methamphetamine. The data support the suggestion that the cholinergic system is composed of two reciprocally related components: 1) a muscarinic no go portion, whose activation has an inhibitory effect on self-stimulation, and 2) a nicotinic go portion, whose excitatory effect on self-stimulation is mediated by norepinephrine. 33 references. (Author abstract modified)

**120786** Kulkarni, A. S. Department of Pharmacology, Dow Human Health Research Laboratories, Zionsville, IN **Selective increase in avoidance responding by methamphetamine in naive rats.** *Psychopharmacologia (Berlin)*. 24(4):449-455, 1972.

Avoidance responses, extra responses (on avoidance lever) and wrong level responses were measured in naive rats acquiring a discriminated avoidance in a 2 lever Skinner box, 30 min after methamphetamine (0.25, 0.5 and 1.0mg/kg). The smallest dose was ineffective; 0.5 and 1.0mg/kg significantly increased the number of avoidance responses. This increase was not associated with a significant increase in the two other responses studied. The progressive increase (from the first to second part of the acquisition session) in avoidance responses was not accompanied by a parallel increase in the other responses. The position discrimination and the discrimination of the

presence or absence of the conditioned stimulus was observed to be better in the drug groups. 29 references. (Author abstract)

**120787** Morrison, Cathleen F.; Stephenson, Jane A. Tobacco Research Council Laboratories, Harrogate, England **Drug effects on unconditioned light-avoidance in the rat.** *Psychopharmacologia* (Berlin). 24(4):456-461, 1972.

Drug effects on unconditioned light avoidance behavior in the rat were studied. It was found that rats avoid the brightly illuminated arm of a Y-maze whose other arms are dark. This avoidance is unaffected by tranquilizing drugs which reduce avoidance of an open sided, elevated arm, suggesting that these are two distinct behaviors which are probably under different motivational control. 6 references. (Author abstract modified)

**120788** Hughes, R. N. Department of Psychology, University of Canterbury, Christchurch 1, New Zealand **Chlordiazepoxide modified exploration in rats.** *Psychopharmacologia* (Berlin). 24(4):462-469, 1972.

Effects of 2.5, 3.75 and 5.0mg/kg chlordiazepoxide on locomotion, rearing and preferences for novelty in rats were observed in an exploration box comprising a novel and a familiar half. Whereas an inverted U relationship between dose strength and locomotion was evident, rearing declined with increasing dosage. However, the two lower doses had little effect on preferences for novelty but 5.0mg/kg produced a marked decrease to the point where the familiar half of the apparatus was preferred. It was concluded that estimates of drug effects on measures of locomotion or general activity are specific to those behaviors alone and do not necessarily relate to environmentally oriented exploration. Different views of the effects of drugs on exploratory behavior might arise from the use of more valid indices, such as preferences for novelty. 33 references. (Author abstract)

**120789** Van Abeelen, J.; Gilissen, L.; Hanssen, Th.; Lenders, A. Genetics Laboratory, University of Nijmegen, Driehuizerweg 200, Nijmegen, The Netherlands **Effects of intrahippocampal injections with methylscopolamine and neostigmine upon exploratory behaviour in two inbred mouse strains.** *Psychopharmacologia* (Berlin). 24(4):470-475, 1972.

After stereotactically injecting male mice of the inbred strains C57BL/6 and DBA/2 with two doses of methylscopolamine or with two doses of neostigmine into the left dorsal hippocampus, the frequencies of the exploratory acts rearing, leaning, and sniffing carried out in a novel environment were recorded. At the lower dose level, the anticholinergic drug tended to augment exploration in strain DBA and to reduce it in strain C57BL; the two doses of anticholinesterase diminished the scores in both genotypes. From these data it is concluded that the hippocampus contains a cholinergic mechanism which regulates exploratory behavior and which is genetically controlled.

**120790** Senault, B. Department de Pharmacologie, Laboratoire Le Brun, 41 bis, Bd. Anatole-France, F-93 Aubervilliers, France **The influence of adrenalectomy, hypophysectomy, thyroidectomy, castration, and testosterone on a pomorphine induced aggressive behaviour in the rat.** Influence de la surrenalectomie, de l'hypophysectomie, de la thyroidectomie, de la castration ainsi que de la testosterone sur le comportement d'agressivite intraspecificue induit par l'apomorphine chez le rat. *Psychopharmacologia* (Berlin). 24(4):476-484, 1972.

The influence of adrenalectomy, hypophysectomy, thyroidectomy, castration, and testosterone on apomorphine induced aggressive behavior in the rat was studied. The weights of testes, prostates, adrenals, thymus and the pituitary of rats with apomorphine induced aggressiveness did not differ from those without aggressiveness. Postpubertal castration, adrenalectomy or thyroidectomy did not reduce the apomorphine induced aggressive behavior, but a considerable reduction was found after hypophysectomy. Prepubertal castration significantly reduced, but did not completely abolish the proportion of aggressive rats, especially when castration was performed on the 5th day. Prolonged treatment of male, female and castrated rats with high doses of testosterone from the time of weaning increased the proportion of aggressive animals. Less intensive treatment and treatment of adult rats were ineffective. 15 references. (Author abstract modified)

**120791** Hasselager, E.; Rolinski, Z.; Randrup, A. Sct. Hans Hospital, Dept. E., 4000 Roskilde, Denmark **Specific antagonism by dopamine inhibitors of items of amphetamine induced aggressive**



behaviour. Psychopharmacologia (Berlin). 24(4):485-495, 1972.

Specific antagonism by dopamine inhibitors of items of amphetamine induced aggressive behavior in mice was studied. It is apparent that d-amphetamine in a dose of 15mg/kg elicits both aggressive activities and stereotyped sniffing, licking and biting of the cage in mice. A selective inhibition of the aggressive activities (without general sedation of the mice) was obtained by small doses of the neuroleptics spiramide and trifluoperazine, indicating that this behavior was mediated by increased activity of dopamine in the brain. This indication was supported by experiments with noradrenaline blocking agents and inhibitors of the synthesis of dopamine and noradrenaline. 40 references. (Author abstract modified)

**120792** Iwahara, Shinkuro; Oishi, Hiroshi; Yamazaki, Suteo; Sakai, Kazuya. Tokyo University of Education, Tokyo, Japan **Effects of chlordiazepoxide upon spontaneous alternation and the hippocampal electrical activity in white rats.** Psychopharmacologia (Berlin). 24(4):496-507, 1972.

Chlordiazepoxide (CDP) at 20mg/kg, i.p. reduced the rate of spontaneous alternation in hungry rats on 6 successive trials with no particular reward in a T-maze (Experiment I). The result could not be ascribed simply to the drug produced changes in running speeds; although alternation is usually assumed to be higher in rate with shorter interchoice intervals, CDP rats ran slightly faster than saline rats. The same dose of CDP depressed the hippocampal theta activity by decreasing its frequency and facilitating regular fast activity of about 30 Hz which was superimposed on the theta rhythm (Experiment II). The reduction of alternation after CDP was explained in terms of the drug's depressant action upon one of the hippocampal functions, characterized by the theta activity, which is assumed to have a significant role in internal inhibition underlying such behaviors as discrimination reversal, passive avoidance, extinction, frustration, habituation and spontaneous alternation. 29 references. (Author abstract)

**120794** Tonge, Sally R.; Leonard, Brian E. School of Pharmacy, the Polytechnic, Byrom St., Liverpool, England **Partial antagonism of the behavioural and neurochemical effects of phen-**

**cyclidine by drugs affecting monoamine metabolism.** Psychopharmacologia (Berlin). 24(4):516-520, 1972.

Partial antagonism of the behavioral and neurochemical effects of phencyclidine by drugs affecting monoamine metabolism was studied in rats. It is apparent that phencyclidine, in common with other hallucinogenic drugs, affects 5-hydroxytryptamine metabolism in the brains of rats. The interactions of phencyclidine with imipramine and tetrabenazine have been examined. 5-Hydroxytryptamine and 5-hydroxyindoleacetic acid concentrations in three areas of rat brain have been determined after the intraperitoneal administration of phencyclidine, imipramine and tetrabenazine alone and in combination. A combination of imipramine (5mg/kg) and tetrabenazine (40mg/kg) has been found to reverse the effects of phencyclidine on 5-hydroxytryptamine concentrations and to antagonize many of the behavioral effects of the hallucinogen. 12 references. (Author abstract modified)

**120812** Kostowski, Wojciech; Tarchalska, Bozena. Department of Experimental Pharmacology, Medical School of Warsaw, Warsaw 64, Poland **The effects of some drugs affecting brain 5-HT on the aggressive behavior and spontaneous electrical activity of the central nervous system of the ant, Formica rufa.** Brain Research (Amsterdam). 38(1):143-149, 1972.

The effects were studied of 5-hydroxytryptamine (5-HT), 5-hydroxytryptophan (5-HTP) and lysergic acid diethylamide (LSD-25) on aggressive behavior and spontaneous bioelectrical activity of the optic lobes of the ant, Formica rufa. 5-HT, as well as 5-HTP, decreased the number of ants attacking the beetle but increased mutual aggressiveness. The amplitude of EEG waves of spontaneous bioelectrical activity of the optic lobes was increased by both 5-HT and 5-HTP, but markedly decreased by LSD-25. LSD-25 also decreased the aggressiveness of ants. Since behavioral mechanisms of the ant of the genus Formica are based on visual perception, it is suggested that the results are related to disturbances in the visual transmission and perception. 8 references. (Author abstract modified)

**120814** Ho, Beng T.; Taylor, Dorothy; Fritchie, G. Edward; Englert, Leo F.; McIsaac, William M. Texas Research Institute of Mental Sciences, Houston, TX 77025 **Neuropharmacological study**



**of delta(9) and delta(8)-L-tetrahydrocannabinols in monkeys and mice.** Brain Research (Amsterdam). 38(1):163-170, 1972.

In monkeys, delta(8)-tetrahydrocannabinol (delta(8)-THC) and delta(9)-THC were both active at 0.5mg/kg. Animals receiving intravenously 0.5 and 2mg/kg doses of both isomers exhibited changes in behavior. At 10mg/kg, the animals became catatonic and uncoordinated. Both cannabinoids caused a decrease in serotonin and norepinephrine in various discrete areas of the brain. It is possible that these neurochemical changes were related to the behavioral effects. In mice, after intravenous injection delta(8)-2-THC exerted a greater effect on brain concentrations of serotonin and norepinephrine than the delta(9) isomer; although the latter is more potent behaviorally. Some differential effects of the 2 isomers on brain amine levels in specific areas might indicate that not only may there be a difference in potency between the 2 compounds, but that they might each have a qualitatively different spectrum of psychopharmacological action. 13 references. (Author abstract modified)

**121177 Overstreet, David H.; Hadick, David G.; Russell, Roger W.** Department of Psychobiology, University of California, Irvine, CA 92664 **Effects of amphetamine and pilocarpine on eating behavior in rats with chronically low acetylcholinesterase levels.** Behavioral Biology. 7(2):217-226, 1972.

A study was conducted with Sprague-Dawley male albino rats to examine the effects of amphetamine, a sympathomimetic, and pilocarpine, a cholinomimetic, on the eating behavior of normal rats and rats with chronically low acetylcholinesterase levels induced by treatment with diisopropyl fluorophosphate. Amphetamine reduced the food intake of both groups significantly, but to a similar degree. In contrast, pilocarpine reduced the food intake of experimental subjects to a much lesser extent than that of normal subjects. These results offer support for the hypothesis that a reduction in sensitivity of cholinergic receptors may underlie tolerance development to anticholinesterase agents. 23 references. (Author abstract)

**121275 Malec, D.; Kleinrok, Z.** Department of Pharmacodynamics, Medical Academy, Lublin, Poland **The spontaneous motility of rats after intraventricular injection of dopamine.** Neuropharmacology (Oxford). 11(3):331-336, 1972.

The effects of intraventricularly administered doses of dopamine on the spontaneous motility of rats were tested. It was found that these effects are dose dependent: doses of five to 10 micrograms caused a small but statistically significant increase in spontaneous motor activity 20 to 30 minutes following intraventricular administration; greater doses (50 to 100 micrograms) produced an initial decrease in motility along with stupor and an asymmetric body posture, after which there was an increase in the number of motions observed. Biochemical determinations showed that, following the administration of 10 micrograms of dopamine to whole rat brain tissue, no alterations in the levels of dopamine and noradrenaline occurred. However, following the injection of 50 micrograms of dopamine, a statistically significant rise in the brain dopamine level was observed and, 60 minutes later, the level of noradrenalin was also elevated. 24 references. (Author abstract modified)

**121276 Renfro, C.T.; Freedman, P.E.; Rosen, A.J.** Department of Psychology, University of Illinois at Chicago Circle, Box 4348, Chicago, IL 60680 **The concurrent effects of scopolamine on spontaneous motor activity and the acquisition of an active avoidance response.** Neuropharmacology (Oxford). 11(3):337-346, 1972.

Scopolamine or saline (2mg/kg i.p.) was administered to 38 adult male rats, after which the rats were tested in either a shuttlebox or activity cages. The injection procedures were subsequently reversed for half the subjects in each group and the testing continued. In general, the drugged subjects exhibited increased activity in the cages and increased spontaneous crossovers in the shuttlebox, as well as impairments in terminal avoidance performance when the effects of increased activity were removed statistically. It is suggested that the latter result is due to an interference by scopolamine with the discrimination processes. 21 references. (Author abstract modified)

**121277 Smith, A.A.; Calhoun, W.H.** Department of Psychology, University of Tennessee, Knoxville, TN **Scopolamine: effects on conditioned suppression.** Neuropharmacology (Oxford). 11(3):347-350, 1972.

Male ICR mice were tested in a two chambered passive avoidance apparatus. A mouse was placed in the apparatus, allowed a 3-minute exploration period, and then either shocked in the smaller

compartment or returned to the home cage. Twenty four hours later, the mice were retested. Locomotor activity in the large (no-shock) compartment and time spent in the small (shock) compartment were recorded. The subjects received 0.5mg/kg of either scopolamine or saline 17 minutes prior to testing. The drug treatment was found to increase motor activity and decrease the time spent in the small compartment, but it did not interfere with either the learning or retention of the passive avoidance response. 6 references. (Author abstract modified)

121281 Jurna, I.; Schlue, W.R.; Tamm, U. Institut für Pharmakologie und Toxikologie der Universität des Saarlandes, Homburg/Saar, Germany. The effect of morphine on primary somatosensory evoked responses in the rat cerebral cortex. *Neuropharmacology* (Oxford). 11(3):409-415, 1972.

Primary somatosensory potentials were evoked in the cerebral cortexes of 38 awake rats via stimulation of the superficial radial nerve. A 2mg/kg intravenously injected dose of morphine enhanced the positive and negative waves of the evoked potential, the effect on the negative wave being much more pronounced than the effect on the positive wave. The maximal effects of the morphine developed more rapidly when halothane anesthesia was employed instead of pentobarbital for the surgical procedure. Direct cortical responses elicited by stimulation of the cortical surface were also enhanced by morphine. The time course and the extent of the effect of the morphine on the direct cortical and on the primary evoked responses were not parallel, however. Levallophan injected intravenously in a dose of 0.2mg/kg inhibited the effect of morphine on the evoked potential considerably more than it inhibited its effect on the direct cortical response. It is suggested that morphine enhances the primary somatosensory evoked potential by increasing the excitability of cortical neurons, an effect in which facilitatory processes in the thalamocortical system may be involved. 14 references. (Author abstract modified)

121303 King, A.R.; Martin, I.L.; Seymour, K.Arabella. MRC Neuropharmacology Unit, Medical School, Birmingham B15 2TJ, England. Reversal learning facilitated by a single injection of lysergic acid diethylamide (LSD 25) in the rat. *British Journal of Pharmacology* (London). 45(1):161P-162P, 1972.

Experiments were carried out to test the effects of various doses of LSD on performance in a learning situation in which rats were required to reverse a previously acquired brightness discrimination response. The LSD was administered in doses of 6.25, 12.5, 25, or 50micrograms/kg 15 minutes prior to the reversal learning situation. It was found that reversal learning was significantly facilitated by LSD at all dose levels except 6.25micrograms/kg. It was also found that the LSD facilitated reversal learning at all time intervals between 5 and 90 minutes after the injections. Biochemical analyses of the brains of the rats used in the experiments indicate that the doses of LSD which caused a facilitation of learning produced increased central levels of 5-hydroxytryptamine (5-HT). It is concluded that LSD facilitates learning and that 5-HT may be involved in the process. 3 references.

121306 Sayers, A.C. Department of Pharmacy, University of Aston in Birmingham, Gosta Green, Birmingham 4, England. Interaction of anticholinergic agents with alpha-methyl-p-tyrosine and d-amphetamine. *British Journal of Pharmacology* (London). 45(1):170-171, 1972.

At the March Proceedings of the British Pharmacological Society, a paper concerning anticholinergic drugs was presented. Four anticholinergic drugs (hyoscine, atropine, methixene, and meth-atropine) were tested for their effects on dl-alpha-methyl-p-tyrosine methylester HCl (H 44/68) to determine whether a cholinergic component is involved in the cataleptic reaction. Both hyoscine and atropine induced a short period of stereotyped sniffing in untreated rats, while methixene produced only a weak response and only when administered in high doses. Pretreatment with H 44/68 abolished the sniffing response induced by atropine, but had no effect on the hyoscine induced behavior. When amphetamine was administered 30 minutes after treatment with atropine, hyoscine, or methixene, the rats became hypersensitive to noise and touch. The hypersensitivity diminished as stereotyped behavior developed and increased again as the behavior declined. The stereotyped behavior was both enhanced and prolonged. When the anticholinergics were administered 30 minutes after amphetamine treatment, a slight hypersensitivity developed and the stereotyped behavior was prolonged and weakly enhanced. When atropine, methixene, or hyoscine were administered following H 44/68 treatment and before amphetamine

treatment, no stereotypies developed, catalepsy was antagonized in a dose dependent manner, and the animals became hypersensitive with increased locomotor activity. When the anticholinergics were administered after both the H 44/68 and amphetamine, hypersensitivity failed to develop and, in the case of atropine and hyoscine, the catalepsy was weakly antagonized. Methixene, on the other hand, hastened the onset of catalepsy and, in high doses, increased its intensity. The meth-atropine was inactive throughout the experiments. It is concluded that the mechanisms underlying stereotyped behavior are antagonistic to those subserving hypersensitivity. 4 references.

**121315** Jackson, D.M. Department of Pharmacology, University of Sydney, 2006, Australia **The effect of beta-phenethylamine upon spontaneous motor activity in mice: a dual effect on locomotor activity.** *Journal of Pharmacy and Pharmacology* (London). 24(5):383-389, 1972.

The effect of intraperitoneal injections of beta-phenethylamine on spontaneous motor activity in mice was examined. It was found that doses of 75mg/kg and higher produced a biphasic type of activity. A primary phase of increased activity occurred about 5 minutes after the injection, and a second phase occurred after 30 minutes. Pharmacological examination of these data showed that the first phase occurred as an indirect effect of the drug and that it was dependent upon the recent synthesis of noradrenalin; the second phase was apparently caused by a direct action of the beta-phenethylamine. Thus the second phase was not affected by reserpine, disulfiram, alpha-methyl-dopa, protriptyline, desipramine, or alpha-methyl-p-tyrosine. It is concluded that phenethylamine differs from amphetamine in its effect on spontaneous motor activity. 16 references. (Author abstract modified)

**121316** Schlechter, Jay M.; Butcher, Larry L. Department of Psychology, University of California at Los Angeles, Los Angeles, CA 90024 **Blockade by pimozone of (+)-amphetamine-induced hyperkinesia in mice.** *Journal of Pharmacy and Pharmacology* (London). 24(5):408-409, 1972.

The effects of intraperitoneal injections of pimozone and d-amphetamine sulfate, separately and in combination, on the locomotor activity of mice is described. It was found, after two hours of activity measurements, that pimozone completely blocked the d-amphetamine induced

hyperkinesia at all intervals measured, while administration of pimozone alone had no significant effect on spontaneous motor activity. It may be concluded that intact dopamine functioning is of major importance for the mediation of d-amphetamine increases in spontaneous motor activity. 8 references.

**121317** Maj, J.; Sowinska, H.; Kapturkiewicz, Z.; Sarnek, J. Institute of Pharmacology, Polish Academy of Sciences, Krakow 52, Ojcowaska Street, Poland **The effect of L-dopa and (+)-amphetamine on the locomotor activity after pimozone and phenoxybenzamine.** *Journal of Pharmacy and Pharmacology* (London). 24(5):412-414, 1972.

The locomotor activity of adult rats and mice was measured in a photoresistor actometer following the administration of various drugs. The drugs included pimozone, which was administered 4 hours before the test, phenoxybenzamine, which was administered 2 hours before the test, L-dopa, administered 1 hour and 45 minutes before the test, and d-amphetamine sulphate, administered 30 minutes before the test. Thirty minutes before the administration of the L-dopa, the animals were given Ro 4-4602, an inhibitor of extracerebral decarboxylase. It was found that pimozone depressed locomotor activity and completely protected the animals against locomotor stimulation induced by amphetamine and L-dopa. The phenoxybenzamine, which markedly depressed motor activity, produced complete or partial inhibition of the hyperactivity induced by L-dopa and amphetamine; it did not, however, inhibit the stereotypy induced by these two drugs. It is concluded that blockade of the central dopamine or noradrenaline receptors antagonizes the increase in locomotor activity induced by compounds that stimulate these receptors. 12 references.

**121361** Hartmann, Ernest; Stern, Warren C. Sleep and Dream Laboratory, 591 Morton Street, Boston, MA 02124 **Desynchronized sleep deprivation: learning deficit and its reversal by increased catecholamines.** *Physiology & Behavior*. 8(4):585-587, 1972.

One hundred and twenty two male Sprague-Dawley rats were subjected to an investigation designed to determine whether the effects of desynchronized sleep (D) deprivation on avoidance acquisition would be altered by L-dopa administration. Four days of D-deprivation (island



technique) produced a significant deficit in subsequent acquisition of an active avoidance task in the rat. Four days of repeated stress resulting in similar adrenal and thymus changes had no effect on acquisition. L-dopa 200mg/kg in normals produced a significant deficit in acquisition, but L-dopa after 4 days of D-deprivation resulted in normal acquisition. Thus, L-dopa reversed the learning deficits produced by D-deprivation. Alpha-methylparatyrosine also produced a deficit in avoidance acquisition, and L-dopa significantly reduced this deficit, suggesting that the catecholamine increase produced by L-dopa is involved. It is suggested that D-deprivation produces defects in the functioning of central catecholaminergic neuronal systems and that the defects are reversible by increasing the availability of catecholamines. 25 references. (Author abstract)

121370 Geyer, Mark A.; Segal, David S.; Mandell, Arnold J. Department of Psychiatry, School of Medicine, University of California, La Jolla, CA 92037 Effect of intraventricular infusion of dopamine and norepinephrine on motor activity. *Physiology & Behavior*. 8(4):653-658, 1972.

In a study designed to provide a direct comparison of the effects of dopamine and norepinephrine on behavior, dose dependent increases in free field activity resulted from intraventricular infusions of these substances in unrestrained male Sprague-Dawley rats. Norepinephrine was more potent than dopamine in producing this hyperactivity. Pretreatment with imipramine, which blocks neuronal uptake of catecholamines, prevented the activation induced by infused dopamine without affecting the response to norepinephrine. However, the effects of dopamine and norepinephrine infusions were not differentially altered by haloperidol, an alleged dopamine receptor blocker. These results suggested that the activity produced by dopamine was due to its conversion to or displacement of norepinephrine and consequent excitation of noradrenergic receptors. 35 references. (Author abstract)

121380 Terpstra, G.K.; Slangen, J.L. Rudolf Magnus Institute for Pharmacology, Medical Faculty, University of Utrecht, Vondellaan 6, Utrecht, Netherlands Central blockade of (methyl)atropine on carbachol drinking: a dose-response study. *Physiology & Behavior*. 8(4):715-719, 1972.

The dose response relationship of carbachol elicited drinking and atropine was investigated with male albino Wistar rats. Administration of carbachol in the tractus diagonalis in rats elicited drinking and no eating. Norepinephrine administered in the same place did not induce drinking or eating. The specific drinking response induced by stimulation with 7.2nmol (=1.3microg) of carbachol was gradually inhibited by preceding injections of graded doses of atropine and methylatropine at the same site. A 90% inhibiting action of atropine and methylatropine was possible with a dose 3-10 times lower (0.18microg) than used in earlier studies. Significant differences between the inhibition by atropine and methylatropine could not be demonstrated. A possible difference in inhibition at the lowest dose of atropine and methylatropine used (=0.04microg) is discussed. 20 references. (Author abstract)

121507 Titus, H.Edwin; Costanzo, Dominic J. Muskingum College, New Concord, OH Effects of puromycin on learning in the toad. *Psychological Reports*. 30(2):627-630, 1972.

Toads (*Bufo americanis*) were tested to determine whether the antibiotic puromycin could produce memory blockage of a learned aversion for stinging honeybees. Unsexed adult toads were assigned to one of five matched groups. The five groups were designated according to whether their food target was nonstinging bees (NS) or stinging bees (S) and whether they received a puromycin injection (P), a saline solution (S) or were untouched: (1) Group P-S, (2) Group S-S, (3) Group P-NS, (4) Group S-NS, and (5) Group N-I. Groups S-S and P-S indicate that puromycin eliminated the effects of training with stinging bees. The toads in Group P-S behaved as though they were never stung. In the case of the toads that had never developed an aversion for the bees, but were injected with puromycin, the drug produced a reaction similar to the generalized aversions animals develop after ingesting substances that have debilitating effects. Evidently puromycin has noxious effects which are not in evidence when used to prevent the expressions of a learned aversion, but these effects can be seen when puromycin is used alone. 8 references.

121882 Adams, William J.; Lorens, Stanley A.; Mitchell, Clifford L. Departments of Pharmacology and Psychiatry, University of Iowa College of



Medicine, Iowa City, IA 52240 **Morphine enhances lateral hypothalamic self-stimulation in the rat.** Proceedings of the Society for Experimental Biology and Medicine. 140(3):770-771, 1972.

The effect of repeated morphine administration on self-stimulation was studied in 14 albino rats (240 to 400 grams). Bipolar 30 gauge tungsten electrodes were implanted stereotactically. Histological analysis at the end of the experiment revealed that all electrodes were localized in the lateral hypothalamic portion of the medial forebrain bundle at the level of the ventromedial hypothalamic nucleus. Seven to 10 days postoperatively, the rats were trained to press a lever for a 0.2second train of bidirectional square waves. The animals were run 10 minutes a day for four to five days. During the next six to nine days, thresholds were determined. The animals were then run with the current set at 80 milliamperes above threshold. Following a six to seven day stabilization period, the rats were divided into two matched groups. During the last five days of the experiment, one group received 1ml/kg subcutaneously of saline; the other group was given 10mg/kg subcutaneously of morphine sulfate. The results indicate that morphine significantly reduced responding for 2 hours following the injection on the first day. A significant increase in responding occurred 5 to 6 hours after injection. Complete tolerance to the suppressive influence of morphine developed by the third day. The excitatory action of morphine continued throughout the 5 days of testing. 3 references.

122026 Consroe, P.F.; White, R.P. Department of Pharmacology and Toxicology, University of Arizona, Tucson, AZ 85721 **Effects of haloperidol and chlorpromazine on central adrenergic and cholinergic mechanisms in rabbits.** Archives Internationales de Pharmacodynamie et de Therapie. 198(1):67-75, 1972.

Haloperidol (HPD) in both low and high doses blocked the cortical EEG and behavioral alerting induced by methamphetamine (METH) in conscious adult rabbits. However, HPD failed to block the EEG activation caused by physostigmine (PHYSO). Also, PHYSO caused a behavioral stimulation and signs of bizarre motor activity when given after HPD. Electroencephalographic and behavioral effects of METH were obtunded by chlorpromazine (CPZ); whereas, the EEG stimulation induced by PHYSO was not blocked. In rabbits given CPZ, PHYSO caused

only ephemeral signs of behavioral stimulation but never bizarre motor activity. These data indicate that HPD and CPZ exert a central antiadrenergic effect with little or no central anticholinergic action suggesting similar mechanisms of action. 33 references. (Author abstract)

122033 Maickel, Roger P.; Maloney, Greg J. Indiana University, Bloomington, IN 47401 **Effects of barbital on deprivation-induced water consumption by rats.** Physiology & Behavior. 8(6):1175-1178, 1972.

Treatment of water deprived male, Sprague-Dawley rats with barbital in doses of 20 to 160mg/kg intraperitoneally evoked an increase in water consumption. The pretreatment time, especially with the largest dose, was critical. Pretreatment of 15 minutes or less caused an increase in water consumption, while increased drinking was observed with 8 or 20 hour pretreatments. The content of sodium in sodium barbital had a significant stimulatory effect on drinking at the 5 minute pretreatment time. 16 references. (Author abstract modified)

122036 Mitler, Merrill M.; Morden, Bruce; Levine, Seymour; Dement, William. Veterans Administration Hospital, Menlo Park, CA **The effects of parachlorophenylalanine on the mating behavior of male rats.** Physiology & Behavior. 8(6):1147-1150, 1972.

Four studies are presented on the effects of para-chlorophenylalanine (PCPA) on the mounting behavior of Sprague-Dawley and Long-Evans male rats. The first study found that PCPA alone and in combination with either pargyline or testosterone increased the tendency for male rats to mount other males. The three other studies strongly indicated that PCPA alone can increase the frequency of heterosexual mounting and copulation in male rats. 11 references. (Author abstract modified)

122039 Bignami, Giorgio; Rosic, Nedeljko. Laboratori di Chimica Terapeutica, Istituto Superiore di Sanita, Viale Regina Elena 299, I-00161 Roma, Italy **Acquisition and performance effects of scopolamine and of treatment withdrawal in avoidance situations.** Physiology & Behavior. 8(6):1127-1134, 1972.

Two experiments were carried out with 144 male Wistar albino rats in order to compare the

effects of scopolamine on acquisition with those of changes of state in either direction (no drug to drug and vice versa). Two avoidance tasks, the acquisition of which was known to be facilitated by small doses of tertiary antimuscarinics, were used. The first study on continuous discriminated lever press avoidance, with either light onset or light offset as warning signal, showed a performance enhancement after the treatment of pretrained animals, and a performance decrement in animals trained in the drug state and then shifted to placebo. The data, however, also showed a partial carryover of the scopolamine facilitation to the no drug condition, and a partial carryover of the no drug retardation to the drug condition. The facilitation of acquisition (reduction of shock rate, enhancement of total response rate and of discriminated responses) and all other phenomena were more marked in the light off condition, which depressed acquisition and performance in untreated animals. The second experiment on discrete trial two way avoidance with light onset as conditioned stimulus used a 2x2x2 design, combining the features of previous studies which had shown contrasting effects of changes of state, depending on various experimental conditions. A performance decrement after treatment withdrawal was again observed in all instances. This experiment confirms that the performance effects of drug administration to pretrained animals depends both on the distribution of previous practice and on the interval between the end of training and the pretest. These results indicate that the contrasting effects of state changes cannot be explained by simple general models. In particular, these data exclude important state dependence phenomena in the case of these agents. 42 references. (Author abstract)

**122058** Nakajima, Shinshu. Department of Psychology, Dalhousie University, Halifax, Nova Scotia, Canada **Proactive effect of actinomycin D on maze performance in the rat.** *Physiology & Behavior*. 8(6):1063-1067, 1972.

Injection of actinomycin D into the hippocampal area of male hooded Royal Victoria rats impaired their performance of a previously learned position discrimination task in a T-maze. Three experiments were conducted to test whether the impairment was due to retroactive interference with some aspect of memory or due to proactive interference with the performance at the time of

retention test. When the animals were tested within a few days after actinomycin injection, their performance of the task was slightly impaired regardless of when the task had been learned originally; when they were tested more than 4 days after injection, the performance was severely impaired, again regardless of the time of original learning. In contrast to the findings in the goldfish and in the mouse, the actinomycin effect in the rat appears to be proactive only, unrelated to memory. 12 references. (Author abstract)

**122078** Newman, L. Michael; Lutz, Michael P.; Gould, Michael H.; Domino, Edward F. Department of Pharmacology, University of Michigan, Ann Arbor, MI **Delta9-tetrahydrocannabinol and ethyl alcohol: evidence for cross-tolerance in the rat.** *Science*. 175(4025):1022-1023, 1972.

Forty male Holtzman albino rats trained in a one way avoidance situation were made tolerant to the depressant effects of delta9-tetrahydrocannabinol. Ethyl alcohol (3.2 grams per kilogram, intraperitoneally) did not greatly affect rats that were tolerant to delta9-THC but depressed the behavior of nontolerant rats. Rats made tolerant to ethyl alcohol were less affected by delta9-THC. 8 references. (Author abstract)

**122184** Cheney, D.L.; Judson, Barbara A.; Goldstein, Avram. Department of Pharmacology, Stanford University, Stanford, CA 94305 **Failure of an opiate to protect mice against naloxone-precipitated withdrawal.** *Journal of Pharmacology and Experimental Therapeutics*. 182(2):189-194, 1972.

Five hundred male Swiss-Webster mice were made dependent upon the opiate narcotic levorphanol by repeated injections of a fixed dose of the drug at 4 or 8-hour intervals. The degree of dependence was measured by determining the effective dose (ED 50) of naloxone for eliciting jumping activity. After dependence was established on either schedule, the greatly increased plasma and brain levels of the agonist (levorphanol) after an injection did not cause any increase in the ED50 of the antagonist (naloxone). The behavior of the antagonists in blocking primary opiate effects is competitive. In contrast, the results indicate that even a large increase in the levorphanol concentration in the brain does not protect the organism against naloxone precipitated withdrawal. 21 references. (Author abstract modified)

**122194** Manning, Frederick J.; Elsmore, Timothy F. Walter Reed Army Institute of Research, Washington, DC 20012 **Shock-elicited fighting and delta9-tetrahydrocannabinol**. *Psychopharmacologia* (Berlin). 25(3):218-228, 1972.

The frequency with which electric shock to the feet elicited fighting in five pairs of albino rats of the Walter Reed strain was not altered significantly by intraperitoneal injections of delta9-tetrahydrocannabinol (THC) in doses ranging from 0.064 to 6.4mg/kg, although chlordiazepoxide reduced the frequency of such fighting in a dose related manner. This finding held true despite manipulations of the marihuana vehicle, the injection test interval, and the previous drug experience of the subjects. In contrast, doses of 4.0mg/kg THC produced a striking reduction in a lever pressing response which had been maintained on a fixed interval 60-second schedule of reinforcement. 18 references. (Author abstract modified)

**122195** Cools, A.R. Department of Pharmacology, University of Nijmegen, Nijmegen, The Netherlands **Athetoid and choreiform hyperkinesias produced by caudate application of dopamine in cats**. *Psychopharmacologia* (Berlin). 25(3):229-237, 1972.

Behavioral changes resembling human athetoid and choreiform hyperkinesias were produced by unilateral injections of L-3,4-dihydroxyphenylalanine (L-DOPA), dopamine, 3-methoxytyramine, and dexamphetamine into the rostromedial part of the caput caudati of cats; saline, noradrenaline, and 3,4-dihydroxyphenylacetic acid were ineffective. Pretreatment with the tyrosine hydroxylase inhibitor, alpha-methyl-para-tyrosine, blocked the effects induced by L-DOPA, dopamine, and dexamphetamine in a competitive way; the 3-methoxy-tyramine effect was blocked in a noncompetitive way. Applications of the active compounds into the anteroventral part of the caput caudati were ineffective. The hypothesis is put forward that normally dopamine sensitive sites are involved in the manifestation of chorea - athetoid movements. It is therefore suggested that the enthusiasm for the L-DOPA treatment of patients with Parkinsonism might have to be tempered, as L-DOPA treatment of these patients may result in the chorea - athetoid hyperkinesias. 21 references. (Author abstract modified)

**122200** Buxbaum, D.M. Tennessee Neuropsychiatric Institute, Central State Hospital, Nashville, TN 37217 **Analgesic activity of delta9-tetrahydrocannabinol in the rat and mouse**. *Psychopharmacologia* (Berlin). 25(3):275-280, 1972.

An analysis of the analgesic activity of delta9-tetrahydrocannabinol (delta9-THC) was carried out in rats and mice using both the hot plate and tail flick tests. In male Sprague-Dawley rats, the dose effect curve of delta9-THC was comparable to that of morphine on both tests. In male Dublin DBL/ICR mice, however, the THC dose effect curves were more variable and less steep than the morphine dose effect curves. Marihuana was less potent than morphine in both tests in mice. THC analgesia reached its peak after 1 hour and had a longer duration of action than morphine. 10 references. (Author abstract modified)

**122201** Roffman, Mark; Lal, Harbans. Department of Pharmacology and Toxicology, College of Pharmacy, University of Rhode Island, Kingston, RI 02881 **Role of brain amines in learning associated with 'amphetamine-state.'** *Psychopharmacologia* (Berlin). 25(3):195-204, 1972.

In Sprague-Dawley albino rats, conditioned avoidance responses (CAR) acquired under the influence of amphetamine were recalled without deficit only when the animals were retested under the influence of amphetamine (amphetamine state dependent learning). Neither hydroxyamphetamine nor 5-hydroxytryptophan (5HTP) were able to induce the amphetamine state, but dihydroxyphenylalanine (DOPA) was able to do so. Reserpine was able to eliminate the amphetamine state, while syrosingopine was not. DOPA and 5HTP given together restored the amphetamine state in reserpinized animals. Both methyl-p-tyrosine and p-chlorophenylalanine produced deficits in the retention of the CAR in amphetamine trained animals; the effects of the former were alleviated by DOPA and the effects of the latter were alleviated by 5HTP. Both chlorpromazine and cyproheptadine antagonized the amphetamine state. The amphetamine state is related to the stimulation of central amine receptors and depends on newly synthesized catecholamines which stimulate central catecholamine receptors through serotonin modulation. 23 references. (Author abstract modified)



**122228** Flynn, Arthur. Surgical Research Laboratories, Cleveland Metro.General Hospital, Case Western Reserve Univ.School of Medicine, Cleveland, OH 44109 Cholinergic and adrenergic effects of atropine and physostigmine on brain chemistry and learned behavior. *Research Communications in Chemical Pathology and Pharmacology*. 4(1):173-180, 1972.

The effects of atropine and physostigmine on brain ribonucleic acid (RNA), protein, norepinephrine, and acetylcholinesterase were examined along with the correlation between changes in these parameters and changes in behavior as determined by reversal learning of a previously acquired spatial position habit in a T-maze. The subjects for the experiment were adult C3H mice. The group which was given physostigmine required significantly fewer days to learn than did the control group. In addition, the two drug groups differed significantly from the placebo group in terms of norepinephrine concentrations and acetylcholinesterase activities. The two drugs had no effects on brain and body weight or on brain protein and RNA concentrations. From the behavioral and biochemical findings, it was concluded that both the cholinergic and adrenergic systems in the brain are implicated in atropine and physostigmine action, and that these two drugs induce significant behavioral changes. 17 references. (Author abstract modified)

**122238** Park, S.; Happy, J.M.; Prange, A.J., Jr. Department of Psychiatry, School of Medicine, University of North Carolina, Chapel Hill, NC 27514 Thyroid action on behavioral-physiological effects and disposition of phenothiazines. *European Journal of Pharmacology (Amsterdam)*. 19(3):357-365, 1972.

As part of an investigation into the possibility that thyroid hormones may potentiate the actions of phenothiazines, male Swiss-Webster mice were thyroid fed for varying amounts of time and were then injected with various doses of phenothiazines. It was found that thyroid feeding increased the lethality of chlorpromazine, perphenazine, and thioridazine, with the degree of lethality increasing as a function of the duration of thyroid feeding. All three drugs shortened the survival of both thyroid fed and control mice in a sealed environment. Following thyroid feeding, decreased amounts of chlorpromazine were needed to produce excitement, convulsions, and

death. In euthyroid mice, all doses of chlorpromazine were hypothermic; in hyperthyroid mice, small doses had little effect and larger doses were hyperthermic. Following the i.p.administration of radioactive chlorpromazine, more radioactivity was found in the brains of the thyroid fed mice than in the control animals. The increased radioactivity alone did not account for the increased responsiveness of the thyroid fed animals since, when they died, their brain levels of the drug were the same as those of control mice who survived. It is concluded that the thyroid induced hyperthermia may have contributed to some of the findings, but that it could not have accounted from the shortened anoxia survival of the euthyroid mice given phenothiazine. 21 references. (Author abstract modified)

**122242** Spaulding, T.C.; Ford, R.D.; Dewey, W.L.; McMillan, D.E.; Harris, L.S. Department of Pharmacology, School of Medicine, University of North Carolina, Chapel Hill, NC 27514 Some pharmacological effects of phenitron and its interaction with delta9-THC. *European Journal of Pharmacology (Amsterdam)*. 19(3):310-317, 1972.

An experiment was undertaken to investigate the pharmacological effects of phenitron (3-(hexahydro-1-H-azepin-1-yl)-3'-nitropropiphenone (HCl), a compound which has been reported to block and reverse the toxic and behavioral effects of hashish in dogs. There was no apparent blockage of cannabinoid like activity when phenitron was administered prior to or concomitantly with delta8-tetrahydrocannabinol (delta8-THC), and delta9-THC, or marihuana distillate in dogs and pigeons. However, phenitron produced bizarre behavioral effects in dogs when given a dose of 40mg/kg, and it decreased the rate of conditioned key pecking for food in pigeons at doses above 18mg/kg. When phenitron and delta9-THC were given simultaneously, a dose dependent inhibition of delta9-THC induced activity in the tail flick test in mice was observed. Phenitron did not block the hypothermia produced by either a single injection or five daily injections of delta9-THC in mice. Phenitron also produced a decrease in spontaneous activity and had a lethal dose 50 of 175mg/kg i.p.in mice. 10 references. (Author abstract)

**122390** Lewis, Donald J.; Bregman, Norman J. Department of Psychology, University of Southern California, Los Angeles, CA 90007 The



**cholinergic system, amnesia and memory.** *Physiology & Behavior.* 8(3):511-514, 1972.

Three experiments are reported which attempt to manipulate memory through the cholinergic system. All animals learned a single trial passive avoidance response followed immediately by ECS or Sham ECS. In the first, prostigmine was used to rule out the possibility that effects could be due to peripheral response mechanisms. In the second, physostigmine was administered either one or 24 hours or 7 days after ECS. Physostigmine had no effect on the ECS produced amnesia, but when administered alone, 24 hours following learning, it produced a partial amnesia. In the third experiment, scopolamine was administered prior to learning and ECS. No drug effect was detected. All tests were conducted 24 hours following injection. When the effects of the drugs have dissipated at the time of test, no effect is noted. This suggests that previous effects, found with contemporary drug effects still present, are not relatively permanent and therefore not on memory. 13 references. (Author abstract)

**122391** Leaton, R.N.; Rech, R.H. Department of Psychology, Dartmouth College, Hanover, NH 03755 Locomotor activity increases produced by intrahippocampal and intraseptal atropine in rats. *Physiology & Behavior.* 8(3):539-541, 1972.

Increases in locomotor activity in 12 male albino Sprague-Dawley rats were produced by intrahippocampal and intraseptal application of crystalline atropine sulfate. The correlation of positive effects with anatomical location suggested that the activity increases were not due to widespread diffusion of the drug. Cannulas that opened into the lateral ventricle produced less activity increase than cannulas well placed in the hippocampus or medial septal area. The data support the suggestion of a septo-hippocampal site of action of atropine and are consistent with the hypothesis of a cholinergic inhibitory system anatomically located in the septo-hippocampal complex. 14 references. (Author abstract modified)

**122395** Broekkamp, C.; Van Rossum, J.M. Department of Pharmacology, Catholic University Medical School, Nijmegen, The Netherlands Clonidine induced intrahypothalamic stimulation of eating in rats. *Psychopharmacologia (Berlin).* 25(2):162-168, 1972.

Intracerebral injection of 1 microliter volumes of solutions containing noradrenaline, clonidine, oxymetazoline and phentolamine were performed in the anterolateral hypothalamus of the Wistar rat at the level of the pars infracommissuralis of the stria terminalis. Intrahypothalamic clonidine in a dose as low as 1 microgram strongly increased food intake in satiated rats. Clonidine (4micrograms) was more potent than noradrenaline (12micrograms) but as potent as oxymetazoline (1.5micrograms). The clonidine induced response was completely blocked by the alpha-sympatholytic drug phentolamine. The results emphasize the role of clonidine as an activator of noradrenaline receptors in the central nervous system. 11 references. (Author abstract)

**122398** Ferraro, Douglas P.; Billings, David K. Department of Psychology, University of New Mexico, Albuquerque, NM Comparison of behavioral effects of synthetic (-)delta9-tetrahydrocannabinol and marijuana extract distillate in chimpanzees. *Psychopharmacologia (Berlin).* 25(2):169-174, 1972.

Eight chimpanzees emitted panel push responses under a procedure in which three operant schedules of positive reinforcement, each associated with a different stimulus, were presented successively. The fixed ratio (FR) schedule required the emission of 40 responses for reinforcement. Reinforcement under the differential reinforcement of low rate (DRL) schedule was delivered only for a response that followed the immediately preceding response by 10 or more sec. No responses were reinforced under the extinction or time out from reinforcement (TO) schedule. The behavioral effects produced by a marijuana extract distillate containing a known amount of (-)delta9-trans-tetrahydrocannabinol (delta9-THC) were compared with those produced by a totally synthesized delta9-THC. On 4 separate drug days each chimpanzee was orally administered one of the two compounds 2.5h prior to experimentation in amounts yielding 1.0mg/kg delta9-THC. Only the DRL schedule performance was significantly affected by either drug compound. Both the marijuana extract and the synthetic delta9-THC produced a statistically significant decrease in the percentage of correct DRL responses. However, no statistically significant differences between the drug effects produced by the two delta9-THC dose forms were obtained. 14 references. (Author abstract)

**122450** Lissak, K.; Bohus, B. Institute of Physiology, University Medical School, Pecs, Hungary **Pituitary hormones and avoidance behavior of the rat.** *International Journal of Psychobiology.* 2(2):103-115, 1972.

The nature of the behavioral effects of pituitary peptides and that of hypophysectomy were studied by examining the influence of ACTH (the adrenocorticotrophic hormone), vasopressin, and vasopressin-like peptides and the influence of pituitary removal on passive avoidance behavior and active avoidance acquisition in the rat. Enhancement of avoidance latencies was observed in a light versus shock passive avoidance situation 24 and 48 hours after the single learning trial when lysine8-vasopressin, pitressin, or ACTH were given prior to the learning trial with low shock intensity. Only pitressin had a delayed effect on passive avoidance retention. Substantial retention of the task was observed 240 hours after the learning trial. Structure activity experiments revealed the importance of the C-terminal part of the vasopressin molecule in the behavioral effect of the peptide. Substitution of phenylalanine for tyrosine in the second position of the amino acid sequence of vasopressin resulted in a loss of behavioral activity. The effect of hypophysectomy on passive avoidance behavior was related to shock intensity. Severe impairment of avoidance was observed at low shock intensity; no effect was apparent at high shock intensity. These observations suggest an influence on fear motivation rather than on learning ability. Active avoidance behavior of rats treated with pitressin showed great individual variations. Enhancement of acquisition of a pole-jumping response may be overcomplicated by the suppression of motor activity. The observations favor a substantial influence of pituitary peptides on fear-motivated behavior of the rat. However, it remains to be shown whether fear drive is affected by these hormones or a more specific effect on learning function is involved. 33 references. (Author abstract modified)

**122569** Wallach, Marshall B; Gershon, Samuel. Neuropsychopharmacology Research Unit, Dept. of Psychiatry, New York New York Univ. Medical Center, 550 First Avenue, NY, NY 10016 **The induction and antagonism of central nervous system stimulant - induced stereotyped behavior in the cat.** *European Journal of Pharmacology (Amsterdam).* 18(1):22-26, 1972.

Stereotyped behavior can be induced in the cat by d-amphetamine, l-amphetamine, cocaine, l-dopa, methylphenidate and pemoline magnesium hydroxide. Pretreatment with alpha-methyl-tyrosine inhibits stereotyped behavior due to amphetamine, pemoline, and to some extent cocaine. Reserpine pretreatment disrupts stereotyped behavior due to all the agents except l-Dopa. High doses of N-(D,L-seryl)-N'-(2,3,4-trihydroxybenzyl) hydrazine, a centrally active Dopa decarboxylase inhibitor, antagonizes the l-Dopa decarboxylase inhibitor and antagonizes the l-dopa induced behavior. It would appear that stereotyped behavior is a catecholaminergic phenomenon. 33 references. (Author abstract modified)

**122953** Payne, R.B.; Rook, J.C.; Peters, R.D. University of Georgia, Athens, GA 30601 **Habit strength, drive, and drug effects: round 2.** *Psychonomic Science.* 28(5):297-298, 1972.

The effect of chlorpromazine (CPZ) on resistance of leverpressing to extinction was examined under varying levels of habit strength (H) and drive (D) in rats. Resistance was decreased by CPZ and increased by augmented H and D. The increments of resistance were essentially alike for CPZ and placebo groups, in accordance with theoretical expectation. 9 references. (Author abstract)

**122956** Cole, Sherwood O. Rutgers University, Camden, NJ 08102 **An investigation of amphetamine anorexia under three motivational conditions of free feeding.** *Psychonomic Science.* 28(5):295-296, 1972.

The depressant effect of amphetamine on free feeding behavior under three conditions of feeding motivation (defined by specific hour of food privation) was investigated in the rat to determine the generality of the drug's action. Male rats were administered a free feeding test under one of nine combined conditions of amphetamine (0.0, 0.5, 1.0mg/kg) and food deprivation (0, 24, 48 h). Overall results demonstrated a significant drug effect and deprivation effect on feeding. Further analysis of the drug's action under each of the motivational conditions demonstrated that the depressant effect of amphetamine was generalized over the range of motivational conditions studied and that the pattern of the dose response function was quite similar. 5 references. (Author abstract)

**122957** Gonzalez, Larry P.; Elder, Thomas. no address Depression of spontaneous activity in goldfish by magnesium pemoline. *Psychonomic Science*. 28(5):293-294, 1972.

Two groups were used in an experiment designed to assess the influence of magnesium pemoline on spontaneous activity levels in goldfish. The first group of 36 was used to evaluate the stability of spontaneous activity over three half hour trials, and the second group of 60, which was divided into 10 subgroups, received the drug treatment. The suspension was administered intracranially, and dosages varied from 0.005 to 2.5mg. The results showed that spontaneous activity was depressed significantly under dose levels of 0.5 to 2.5mg, but no observable effect was seen at dosages of 0.005-0.1mg. 7 references. (Author abstract)

**123934** Downs, D.; Cardozo, C.; Schneiderman, N.; Yehle, A.L.; VanDercar, D.H.; Zwilling, G. University of Michigan, Ann Arbor, MI 48104 Central effects of atropine upon aversive classical conditioning in rabbits. *Psychopharmacologia (Berlin)*. 25(4):319-333, 1972.

The central effects of atropine upon aversive classical discrimination conditioning was studied in rabbits. In Experiment 1, 40 rabbits were trained under saline, 10, 18 or 26mg/kg atropine sulfate or 18mg/kg methylatropine. Six rabbits in Experiment 2 were conditioned, then given further sessions with saline, and 18, 26 and 34 mg/kg atropine sulfate and methylatropine. In Experiment 3, 18 rabbits were conditioned and then given two extinction sessions under saline or 34mg/kg atropine sulfate or methylatropine followed by extinction under saline. Chief findings were: 1) atropine sulfate but not methylatropine disrupted acquisition and maintenance of conditioned eyeblinks; 2) neither drug affected unconditioned blinks; 3) fewer blinks occurred in extinction under atropine sulfate than under methylatropine or saline; 4) rabbits extinguished under atropine sulphate showed higher percentages of eyeblinks when tested without drug. Disruptions in performance of learned eyeblink responses appeared to be due to drug interference with central cholinergic transmission. 23 references. (Author abstract)

**123935** Lyon, Melvin; Randrup, Axel. Central Laboratory, Sct.Hans Hospital, Roskilde, Denmark The dose-response effect of amphetamine

upon avoidance behavior in the rat seen as a function of increasing stereotypy. *Psychopharmacologia (Berlin)*. 23(4):334-347, 1972.

The dose response of effect of d-amphetamine upon avoidance behavior in the rat was studied as a function of stereotypy. Repeated sessions with drugs occurred at intervals of at least four days and were interspersed with saline or noninjection control sessions so that results from each animal could be compared with its own control data. Each animal was tested on one of two schedules of reinforcement, both of which used termination of electric shock as the principle response contingent event. In the first schedule (Av-R), each lever press in the presence of shock was followed by a period of no shock and each subsequent lever press within this no shock period further delayed the onset of shock. In the second schedule (Av-H), the shock was off only as long as the animal held the lever in a depressed position and lever release was immediately followed by shock. At 1.0mg/kg d-amphetamine, total avoidance of shock, as compared with control sessions, was increased on the Av-R schedule, but deteriorated on the Av-H schedule, in both cases due to increased lever pressing (and releasing). At higher doses of 3.0-5.0mg/kg, shock avoidance responding on the Av-R schedule was even higher in some animals but decreased or disappeared in others, while holding activity on the Av-H schedule was practically unaffected except in very long sessions. Recording of other bodily activities during these sessions revealed dose related elements of response perseveration and behavioral stereotypy which could be more effectively blended with Av-R responding at low doses and with Av-H responding at higher doses. A theoretical link was suggested between increasingly stereotyped behavior due to the drug effect and the type of responding seen in the two schedules tested here. 20 references. (Author abstract modified)

**123936** Warburton, David M. Department of Psychology, University of Reading, Reading, England Effects of atropine sulphate on repeated extinction performance in hippocampectomized rats. *Psychopharmacologia (Berlin)*. 23(4):348-356, 1972.

The effects of identical doses of atropine sulphate administered to hippocampectomized and partially neocorticated rats trained on repeated extinction were studied. The dose response curves



were compared. The partially neocorticated rats showed a marked increase in responding during the extinction periods and the magnitude of the effect increased with dose as in intact animals. The hippocampectomized animals showed little change in responding with any dose. The attenuation of the dose response effect, in conjunction with other evidence, was consistent with the hypothesis of a second system which mediates response control in the hippocampectomized animals and is not cholinergic. 16 references. (Author abstract)

123937 Simon, P.; Chermat, R.; Fosset, M.Th.; Boissier, J.R. Department of Pharmacologie, Faculte de Medecine Pitie-Salpetriere, Paris /Beta-adrenergic blocking agents and amphetamine- or apomorphine-induced stereotyped behavior in rats./ Inhibiteurs beta-adrenergiques et stereotypes provoques par l'amphetamine ou l'apomorphine chez le rat. *Psychopharmacologia* (Berlin). 23(3):357-364, 1972.

The influence of three beta-adrenergic blocking agents was studied on the stereotyped behavior induced in rats by a range of doses of d-amphetamine or apomorphine. The stereotyped behavior was assessed either clinically (quotation from 0 to 3 at various times for each rat) or using the confinement motor activity test. From 8mg/kg onwards, propranolol and pinodolol clearly potentiated the amphetamine induced stereotyped behavior without any modification of the apomorphine induced stereotyped behavior. Practolol, known for its poor passage through the blood-brain barrier had only a slight effect. 24 references. (Author abstract)

123939 Oishi, Hiroshi; Iwahara, Shinkuro; Yang, Kwo-Man; Yogi, Akiko. Department of Psychology, Tokyo University of Education, Otsuka, Tokyo, 112 Japan Effects of chlorthalidoxepoxide on passive avoidance responses in rats. *Psychopharmacologia* (Berlin). 23(4):373-385, 1972.

The effect of chlorthalidoxepoxide (CDP) on the retention of a passive avoidance response was determined in rats. CDP or saline was given before testing in a two compartment passive avoidance response (PAR) apparatus or in an open field, and again after 48 and 72 h. The PAR was usually depressed by CDP given during acquisition, and it remained present after 48 and 72 h. Treatment with chlorthalidoxepoxide before the second and third testing abolished the depression

of PAR. CDP had most effect of the acquired PAR. Shock treatment resulted in an increase in defecation and urination and a decrease in ambulation and rearing in the PAR apparatus as well as in the open field. These effects were reduced by CDP, irrespective of drug state changes. A clear cut reduction in defecation and urination under CDP in well habituated home cages was also seen. 17 references. (Author abstract)

123950 Newby, Nicki Ann. Case Western Reserve University Habituation to light and spontaneous activity in the isolated siphon of *Aplysia*: the effects of synaptically active pharmacological agents. (Ph.D.dissertation). Dissertation Abstracts International. Ann Arbor, Mich., Univ.M-films, No.72-18719 HC\$10.00 MF\$4.00 182 p.

Spontaneous activity and a reflex response to light in the isolated siphon of *Aplysia* are reported. The light response shows habituation, spontaneous recovery after a time delay, and dishabituation to a mechanical stimulus. A variety of synaptically active agents were tested for their effects on spontaneous activity and the light response. Results indicate that both responses depend upon the presence of endogenous nerve elements. It is hypothesized that light acts directly upon photosensitive neurons. The results indicate that dopamine is probably an excitatory neuromuscular transmitter, and that acetylcholine is probably an inhibitory neuromuscular transmitter. Exogenously applied dopamine has both enhancing and retarding effects on the rate of habituation. These are thought to be due to separate processes of habituation and dishabituation, or inhibition and potentiation, or responding. Habituation does not appear to involve a decrease in the amount of transmitter released from presynaptic terminals. (Journal abstract modified)

123983 Berger, Barry D. Department of Psychology, University of Haifa, Haifa, Israel Conditioning of food aversions by injections of psychoactive drugs. *Journal of Comparative & Physiological Psychology*. 81(1):21-25, 1972.

Conditioning of food aversions by injections of psychoactive drugs was investigated in the rat. Ss were injected with various drugs or saline immediately after drinking milk for the first time. One week later they again were given access to the milk. Conditioned aversion to the milk was produced by moderate doses of scopolamine, scopolamine methyl nitrate, amphetamine,



lorazepam, and chlorpromazine. Conditioned aversion was not obtained if scopolamine was injected 30 min prior to milk drinking or more than 4 hr after milk drinking. 22 references. (Author abstract)

**124153** Marriott, A.S.; Smith, Elaine F. Dept. of Pharmacology, Allen and Hanburys Limited, Ware, Hertfordshire, England An analysis of drug effects in mice exposed to a simple novel environment. *Psychopharmacologia* (Berlin). 24(3):397-406, 1972.

The effects of orally administered drugs on the ambulatory activity of mice placed into a novel environment were investigated. Chlordiazepoxide or diazepam increased ambulatory activity; this effect occurred during the initial minutes of testing but in later minutes activity was reduced. Amylobarbitone, meprobamate or high doses of atropine produced more sustained increases in activity. Ambulatory activity was not increased by chlordiazepoxide or amylobarbitone in mice familiar with the test situation; in these conditions activity was increased by meprobamate and atropine. The observed differences between drugs were discussed in terms of habituation and interactions with environmental novelty. 11 references. (Author abstract)

**124223** Cameron, Oliver G.; Appel, James B. Dept. of Psychiatry, Univ. of Chicago, 950 East 59th St., Chicago, IL 60637 Conditioned suppression of bar-pressing behavior by stimuli associated with drugs. *Journal of the Experimental Analysis of Behavior*. 17(1):127-137, 1972.

The conditioned suppression of bar pressing behavior by stimuli associated with drugs was examined in the rat. Ten naive male albino rats were trained to press a bar under a variable interval 30 sec schedule with water as the reinforcer in 2 experiments. This behavior was disrupted by chlorpromazine in Experiment 1 (2 rats) and by lysergic acid diethylamide (LSD) in both Experiment 1 and Experiment 2 (6 rats). The administration of the drug was paired with an originally neutral white light. After several pairings with either drug, the light also depressed behavior. When the light was no longer paired with drug, the depression effect extinguished much faster than is usually observed in conditioned suppression studies. (Author abstract modified)

**125257** Samsonova, M.L. Laboratoriya psikhofarmakologii Leningradskogo NI psikhonevrologicheskogo instituta im.V.M.Bekhtereva, Leningrad Tryptophan trials in tests for evaluation of antidepressants./ Ispytaniye triptofana v testakh dlya otsenki antidepressantov. *Farmakologiya i Toksikologiya* (Moskva). 35(2):142-145, 1972.

Tryptophan administered to mice and rats failed to display effects typical of antidepressants, namely antagonism with respect to reserpine and synergism with respect to phenamine. Inhibition of the motor activity caused by reserpine (2.5mg/kg), hypothermia and ptosis not change under the effect of tryptophan administered in a dose of 150mg/kg one hour before or 18 hours after administration of reserpine. The preparation given in the same dose did not have any effect on the group toxicity of phenamine or on the protective effect of reserpine on it, or on phenamine induced stimulation of spontaneous motor activity in mice. 12 references. (Journal abstract modified)

**125265** Robu, A.I.; Kuznetsova, T.S. Kafedra fiziologii cheloveka i zhivotnykh Kishinevskogo universiteta im.V.I.Lenina, Kishinev, USSR /Effect of seduxen on the functional state of the adrenal cortex and thyroid gland./ Vliyaniye seduksena na funktsional'noye sostoyaniye kory nadpocheknikov i shchitovidnoy zhelezy. *Farmakologiya i Toksikologiya* (Moskva). 35(2):206-207, 1972.

Experiments on white male rats demonstrated seduxen to stimulate the adrenal cortex function. A single administration of the preparation increases the content of both protein bound and free corticosteroid fractions in peripheral blood. Long-term administration of the drug, on the other hand, leads to an increase in free corticosteroid fraction due to an increased ability of the hormone to combine with blood plasma proteins. The blood plasma hormone level changes slightly with single administration of seduxen. 6 references. (Journal abstract modified)

**125538** Glick, Stanley D.; Milloy, Svetlana. Bernstein Institute, Beth Israel Medical Center, 307 Second Avenue, New York, NY 10003 Increased and decreased eating following THC administration. *Psychonomic Science*. 29(1):6, 1972.

Eating behavior following delta9-tetrahydrocannabinol (delta9-THC) administration to rats was

investigated. Rats deprived of both food and water for 1 day were administered delta9-THC 15 min prior to presentation of food and water. Food and water intake were then measured 2 h later. A dose of 1.0mg/kg of THC increased food intake, whereas a dose of 2.0mg/kg decreased food intake. Water intake decreased with increasing dose. 4 references. (Author abstract)

**126242** Ferraro, Douglas P. Department of Psychology, University of New Mexico, Albuquerque, NM 87106 **Some effects of (-)-delta9-trans-tetrahydrocannabinol on delayed matching to sample performance in chimpanzees.** (Unpublished paper). Rockville, MD, NIMH, 1972, 1 p.

The effects of (-)-delta9-trans-tetrahydrocannabinol (delta9-THC) were studied on delayed matching performance to color and form sample stimuli in five adult chimpanzees. During nondrug control sessions percentage of correct matching responses was inversely related to the length of the delay interval. Following a 2.5hr oral preadministration of 1.0mg/kg delta9-THC, percentage of correct matching responses significantly decreased for delays of five, 10, and 20 sec but was unchanged for 0 and 45 sec delays. No differential delta9-THC drug effects were obtained for color and form stimuli. All chimpanzees were next preadministered additional oral doses of 2.0 and 4.0mg/kg delta9-THC (separated by three to 18 nondrug control days) at matching to sample delay values of 10 and 20 sec. Although a significant decrease in percentage of correct responses was produced at each delay value by the separate delta9-THC doses, the magnitude of this drug effect did not differ as a function of delta9-THC dose magnitude. Finally, all chimpanzees were given 21 consecutive daily administrations of 1.0mg/kg delta9-THC under a 20 sec delayed matching to sample baseline. No tolerance to the decrease in percentage of correct matching responses produced by delta9-THC was observed. Control levels of responding were completely recovered within six days following the last drug administration. (Author abstract)

**126906** Crowder, William F.; Smith, Stanley G.; Davis, W. Marvin; Noel, Judith T.; Coussens, Wayne R. Department of Psychology, University of Mississippi, University, MS 38677 **Effect of morphine dose size on the conditioned reinforcing potency of stimuli paired with morphine.** Psychological Record. 22(4):441-448, 1972.

The effect of morphine dose size on the conditioned reinforcing potency of stimuli paired with morphine was studied in rats. After an initial operant level period, 22 rats were given noncontingent pairing of a buzzer with intravenous injections of morphine solution in doses of 0.0032mg/kg, 0.032mg/kg, and 0.32mg/kg. The buzzer plus a saline infusion were then presented contingently on barpressing behavior. The results of this test indicated that buzzer plus saline infusion had acquired secondary reinforcing properties, the magnitude of which increased with increasing dosage of morphine. The results may be attributed to conditioned positive reinforcement, since no physical dependence was evident. The present findings also suggest that a stimulus can become a secondary reinforcer without being a discriminative stimulus for an operant. 22 references. (Author abstract)

**127023** Thompson, Richard W.; Nielsen, Cathy. Western Washington State College, Bellingham, WA 98255 **The effect of scopolamine on the Kamin effect: a test of the parasympathetic overreaction hypothesis.** Psychonomic Science. 28(3):140-142, 1972.

The Kamin effect, the U-shaped curve of retention of a partially learned shuttle avoidance response, was replicated in animals trained and tested for retention after delays of 0, 1, 4, or 24 h. Other animals treated with scopolamine hydrobromide, a cholinergic blocker, during the 1 h delay between learning and relearning showed no performance decrement. However, animals treated with methylscopolamine, which does not cross the blood brain barrier, during the 1 h delay did show the typical Kamin effect decrement in performance. The results were interpreted as supporting a central cholinergic basis for the Kamin effect. 13 references. (Author abstract)

**127213** McKearney, James W. no address 1. **Schedule-dependent effects: effects of drugs, and maintenance of responding with response-produced electric shocks.** In: Gilbert, R., Schedule effects: drugs, drinking, and aggression. Toronto, University of Toronto Press, 1972. (p. 3-25).

Experiments on the effects of drugs on behavior and on the varied effects of electric shocks in animals are reviewed in order to illustrate the general dependence of the effects of environmental events on the precise conditions under which they are presented. The effects of

many drugs on behavior seem to depend significantly upon the control rate and pattern of responding, irrespective of supposed intervening rates, a finding which suggests that drugs modify behavior patterns themselves rather than the motivational or emotional states that are thought to underlie behavior. It is possible to change an elicited pattern of responding by presenting response dependent shocks under a fixed-interval schedule. Further experimental analysis of behavior which is controlled by its consequences is suggested. 31 references.

**127344** Grossman, Sebastian P. Department of Psychology, University of Chicago, Chicago, IL. **The role of the amygdala in escape-avoidance behaviors.** In: Eleftheriou, B., *Neurobiology of the amygdala*. New York, Plenum Press, 1972. 819 p. (537-551).

The role of the amygdala in escape avoidance behavior was studied. When the amygdala is stimulated or facilitated, rats and cats find it difficult to inhibit aggressive reactions to such stimulation, and appear unable to develop normal escape or avoidance reactions. In the cat, such stimulation produces vicious attack responses to normal handling. In the normally tame laboratory rat, such overt displays of aggressive reactions rarely occur, but the animals appear unable to inhibit emotional reactions to normal handling and consequently cannot benefit from the taming effect which repeated handling exerts on normal rats. When these components of the amygdala are inhibited pharmacologically, rats appear less reactive and acquire simple conditioned avoidance responses faster than normals. Similar facilitatory effects were observed in rats with small lesions restricted to either the cortical, basolateral, or central nuclei of the amygdala. Opposite inhibitory effects were observed in animals with lesions which destroyed portions of the piriform cortex but did not invade the amygdala itself. The amygdaloid influence on escape avoidance behavior does not appear to be related to the direct amygdalofugal pathways which interconnect it with the hypothalamus. Instead, they appear to be related to pathways which enter the lateral hypothalamus anteriorly or rostrally. 9 references.

**127528** Babbini, M.; Gaiardi, M.; Bartoletti, M. Institute of Pharmacology, University of Bologna, 40126 Bologna, Italy **Changes in operant behavior as an index of a withdrawal state from morphine in rats.** *Psychonomic Science*. 29(3):142-144, 1972.

Changes in operant behavior were studied as an index of a withdrawal state from morphine in rats. Rats previously trained to a fixed-ratio schedule (FR 50) were treated twice daily with saline or morphine sulfate (final dose, 40mg/kg IP) for 20 days. On days 21, 22, and 23, the morphine treated animals received saline instead. Operant behavior was recorded during the first 14 days of treatment and again on days 19-23. It was found that, during the first day of withdrawal, the mean lever pressing rate of the morphine group decreased significantly, indicating that an abstinence syndrome in rats can be detected by means of an operant behavior technique. 13 references. (Author abstract)

**128323** McMillan, D. E. Dept. of Pharmacology, School of Medicine, Univ. of North Carolina, Chapel Hill, NC 27514 **Drugs and punished responding I: rate-dependent effects under multiple schedules.** *Journal of the Experimental Analysis of Behavior*. 19(1):133-145, 1973.

The effects of drugs were studied in pigeons whose responses were punished with electric shock during one component of a multiple fixed-interval 5 min fixed-interval 5 min schedule of food presentation. Most of the drugs analyzed for rate dependent effects increased low rates of both punished and unpunished responding, while increasing higher rates less, or decreasing them; however, low rates of punished responding sometimes were increased more by pentobarbital, diazepam, and chlordiazepoxide than were matched rates of unpunished responding. In contrast, d-amphetamine and chlorpromazine usually increased low rates of unpunished responding more than matched rates of punished responding. These two drugs also decreased high rates of unpunished responding less than they decreased high rates of punished responding. Thus, the effects of drugs on punished responding depend on the control rate of punished responding; however, the rate dependent effects of drugs on punished responding are not always the same as they are for unpunished responding. 24 references. (Author abstract)

**128338** Johnson, F. N.; Barker, G. J. Dept. of Psychology, University of Birmingham, Birmingham, England **Effects of lithium chloride on learned responses: acquisition, retention, and expression.** *Diseases of the Nervous System*. 33(10):664-666, 1972.



The effects of lithium chloride on learned responses was examined in the rat. Lithium chloride, given to rats before they were trained in an escape avoidance situation, was found to enhance their performance when they were subsequently tested 24 hours later. Pretesting administration of the drug, on the other hand, impaired the reacquisition of the learned avoidance response. The results may be explained in terms of an effect of lithium chloride on the central analysis of stimulus input. 10 references. (Author abstract modified)

**128458** Ueki, Showa; Nurimoto, Seiichi; Ogawa, Nobuya. Department of Pharmacology, Faculty of Pharmaceutical Sciences, Kyushu University, Fukuoka, Japan *Effects of psychotropic drugs on emotional behavior in rats with limbic lesions, with special reference to olfactory bulb ablations.* *Folia Psychiatrica et Neurologica Japonica* (Tokyo). 26(3):245-255, 1972.

The effects of various psychotropic drugs on emotional behavior of rats with bilateral ablations of the olfactory bulb (OB) were compared with those in rats with intact olfactory bulbs as well as in rats with septal or amygdaloid lesions. Chlorpromazine markedly reduced both ambulation and rearing in intact as well as limbic lesioned rats. The hyperemotional responses to all kinds of stimuli were suppressed by this drug in the OB and septal rats. Diazepam also suppressed the hyperemotional responses of the OB and septal rats, but on the contrary with chlorpromazine, it increased ambulation whereas it decreased rearing in the intact and amygdaloid rats. Pentobarbital had no significant effect on the hyperemotionality of the OB and septal rats in subhypnotic doses. Pentobarbital, like diazepam, increased ambulation but decreased rearing of the intact rats, although it markedly reduced both ambulation and rearing of the septal rat, and showed less significant effects on ambulation of the OB and amygdaloid rats. Imipramine, similar to chlorpromazine, decreased both ambulation and rearing in each group of rats. Imipramine selectively blocked mouse killing behavior without affecting the other hyperemotional responses to stimuli of the OB rats. 17 references.

**129423** Gott, C. Thomas; Weiss, Bernard. Dept. of Neurosurgery, University of Virginia, Charlottesville, VA *The development of fixed-ratio performance under the influence of ribonucleic acid.*

*Journal of the Experimental Analysis of Behavior.* 18(3):481-497, 1972.

The transition from fixed-ratio 1 performance (every response reinforced) to fixed-ratio 30 performance (every thirtieth response reinforced) was studied in nine pigeons. These were divided into three treatment groups given daily oral doses of saline, or 250 mg/kg/day or 500 mg/kg/day of yeast ribonucleic acid. Detailed computer assisted analyses of how fixed-ratio behavior develops revealed the following typical sequence. After the transition, the first few ratios typically were emitted without long interresponse times within the ratio. Steady responding then ceased, and numerous long interresponse times occurred, with no systematic relationship to ordinal position within the ratio. Gradually, a new pattern evolved, characterized by a consistently long post-reinforcement time, a border region of the next few interresponse times within which the mean interresponse time monotonically decreased, and short interresponse times within the last 80% of the ratio. Long interresponse times were eliminated from the last section of the ratio without regard to proximity to reinforcement. Various analytical procedures suggested that the final pattern can be conceived, in part, as the shaping of a reliable response topography. The group of three pigeons given 250 mg/kg/day of yeast ribonucleic acid responded at higher rates than the saline and 500 mg/kg/day groups. The latter group, in contrast to the saline and lower dose groups, which continued to increase their rates, reached a rate asymptote very early. 34 references. (Author abstract)

**129619** Freed, Earl X.; Fazzaro, James; Hymowitz, Norman. Alcohol Research Laboratory, V.A. Hospital, Lyons, NJ *Syrup methadone consumption by rats. Perceptual and Motor Skills.* 35(1):322, 1972.

Methadone self-administration was studied in rats. Food, fluid intake, and activity were measured. While drinking methadone syrup, food intake by rats was decreased; the amount of methadone syrup intake was greater than water; and animal activity after withdrawal was decreased. Since rats will drink methadone syrup in volumes significantly in excess of their daily consumption of water, it is suggested that this method may be used to study possible methadone addiction and its sequelae.



**129868** Peek, Frank W. Department of Animal Science, University of Minnesota, St. Paul, MN 55101 The effect of tranquilization upon territory maintenance in the male red-winged blackbird (*Agelaius Phoeniceus*). *Animal Behaviour* (London). 20(1):119-122, 1972.

Reserpine was administered in the field to ten territorial male redwings to determine what effect reducing their level of overt behavior would have upon their ability to maintain territory. The four males which received effective doses gave significantly fewer vocal and visual displays and spent progressively less time on their territories as the drug took effect. There was a significant increase in the rate of trespassing upon the territories of tranquilized males; and as tranquilized males spent more time off territory, conspecific males spent correspondingly more time on them. A critical level of behavior (vocal and visual display and movement) while on territory as well as a critical amount of time on territory seem necessary for normal territory maintenance by male redwings. 10 references. (Author abstract)

**130110** Redmond, D. E., Jr.; Maas, J. W.; Graham, C. W., III. no address The effect of norepinephrine replenishment on alpha-methyl-para-tyrosine treated monkeys. *Psychosomatic Medicine*. 34(5):469, 1972.

At the annual meeting of the American Psychosomatic Society, the effect of norepinephrine replenishment on alpha-methyl-para-tyrosine (AMPT) treated monkeys was reported. Ten animals in two different social groups were treated to produce decreased social initiatives, huddled postures, blank masklike faces and motor retardation. Some animals were also treated with a peripheral decarboxylase inhibitor DL-alpha-(3,4-dihydroxybenzyl)-alpha-hydrazinopropionic acid (MK486) in an attempt to block the production of large amounts of norepinephrine outside the brain. The behavioral and subjective effects of intravenous administration of DL-3,4 threo-dihydroxyphenylserine in doses from 5mg/kg to 400 mg/kg could not be distinguished from those following the administration of an equal amount of the solvent without the amino acid during observation periods up to five hours after administration. There was slight increases in social behavior and the appearances of affect compared with the placebo on the second day after administration, but their meaning was difficult to evaluate. Urinary excretions of

norepinephrine and 3-methoxy-4-hydroxy phenyl glycol in the hours after administration increased several fold. (Journal abstract modified)

**130364** Cappell, Howard; Leblanc, A. E.; Endrenyi, L. Addiction Research Foundation, Toronto, Ontario, Canada Effects of chlordiazepoxide and ethanol on the extinction of a conditioned taste aversion. *Physiology & Behavior*. 9(2):167-169, 1972.

The effects of chlordiazepoxide and ethanol on the extinction of a conditioned taste aversion were studied in rats. Conditioned aversion to saccharin solution was extinguished following injection with saline, chlordiazepoxide (3.00, 4.50, or 6.75mg/kg) or ethanol (600, 900 or 1200mg/kg). Extinction was accelerated by chlordiazepoxide and retarded by ethanol. The latter finding was similar to Baum's observation that ethanol retarded the rate of extinction of a shock motivated avoidance response. However, the results with chlordiazepoxide tended to rule out Amit and Baum's hypothesis that the aversiveness of a drug to a pharmacologically naive animal was the mechanism mediating the extinction phenomenon. 12 references. (Author abstract)

**130909** Nakajima, Ryoko; Mikoda, Reiko; Nagawa, Yuji. Takeda Chemical Industries, Ltd., Osaka, Japan Further pharmacological study on anti-aggressive, sedative and muscle relaxant effects of 8-chloro-6-phenyl-4H-s-triazolo (4,3-a)(1,4)benzodiazepine (D-40TA) in experimental animals: comparative study on potency and duration. *Journal of the Takeda Research Laboratories* (Osaka). 31(3):349-364, 1972.

A comparative study on the potency and duration of antiaggressive effect in various animal models between 8-chloro-6-phenyl-4H-s-triazolo (4,3a)(1,4)benzodiazepine (D-40TA), a new triazolobenzodiazepine and the other known 1,4-benzodiazepines is reported. D-40TA was a little less active than nitrazepam in depression of footshock or isolation induced fighting in mice, both of which being clearly more potent than diazepam, chlordiazepoxide and chlorpromazine in both effects. In inhibiting the hyperemotionality and muricidal behavior of olfactory bulbectomized rats, D-40TA was also equipotent to or more potent than diazepam, chlordiazepoxide and chlorpromazine but less than nitrazepam. Taming effect of D-40TA in squirrel monkeys appeared most rapidly and persisted considerably.

The oral doses of D-40TA or nitrazepam at 2-4mg/kg and diazepam at 16mg/kg in squirrel monkeys caused a considerably deep sleep. The strongest potentiation of ethanol anesthesia in mice was observed with D-40TA among the compounds tested, while this effect of D-40TA, like its potentiating effect on chlorprothixene hypnosis in mice, was of shortest duration. In the traction and inclined screen tests using mice, the muscle relaxant effect of D-40TA was similar to that of nitrazepam in the potency as well as the duration. In the rota rod test using mice, the effect of D-40TA was about one third times that of nitrazepam and of shortest duration among the test compounds. D-40TA was approximately two times as potent as nitrazepam in the same test using rats. 4 references. (Author abstract modified)

**131132** Warburton, David M.; Heise, George A. Dept. of Psychology, University of Reading, Reading, England **Effects of scopolamine on spatial double alternation in rats.** *Journal of Comparative & Physiological Psychology.* 81(3):523-532, 1972.

A method was developed for training spatial double alternation in which responding on different components of the sequence was controlled by different interoceptive and exteroceptive stimuli. This base line was used to compare the effects of scopolamine on the two sorts of cued responding in the same animal. The two types of response did not differ appreciably in susceptibility to disruption by scopolamine. An analysis of errors showed that both switching and perseverative errors were increased by scopolamine and that no lever preferences developed. An analysis of the various response sequences showed that in the same animal the probability of some sequences decreased consistently with increasing dose level, some increased, while others showed an inverted U-shaped function. 20 references. (Author abstract)

**131279** Taska, Ronald; Bloom, J. M. no address **Behavioral effects of prenatal administration of diazepam in the rat.** *Psychonomic Science.* 29(5):332, 1972.

At the thirteenth annual meeting of the Psychonomic Society, the behavioral effects of prenatal administration of diazepam in the rat were reported. Diazepam was administered to pregnant albino rats throughout the gestation period. The offspring were tested at 90 days of

age in the straight runway and at 120 days of age in the activity chamber. Both measures indicated increased emotionality in drug treated as compared to untreated control Ss. (Author abstract)

**131280** Kornetsky, Conan; Golub, Mari. Boston University Medical School, Boston, MA **Prenatal chlorpromazine treatment and adult avoidance learning.** *Psychonomic Science.* 29(5):332, 1972.

At the thirteenth annual meeting of the Psychonomic Society, a study of prenatal chlorpromazine treatment and adult avoidance learning in rats was reported. Litters born to rats treated with the tranquilizing drug chlorpromazine early in gestation were nursed by their own mothers or by untreated foster mothers and then tested for shock avoidance learning at 90 days of age. Compared to controls, these drug treated litters showed more total avoidances and a higher rate of intertrial responding. (Author abstract)

**131281** Olson, James; Carder, Brooks. University of California, Los Angeles, CA **Learned behavioral tolerance to marihuana in rats.** *Psychonomic Science.* 29(5):332, 1972.

At the thirteenth annual meeting of the Psychonomic Society, learned behavioral tolerance to marihuana in rats was reported. Rats were trained to press a lever for food reinforcement in one study and water reinforcement in a second. Rats that received marihuana extract each day before behavioral testing showed an impairment of responding on the first day of drug application, but developed behavioral tolerance by the sixth day of drug application. Rats that received equal doses of marihuana after each session, rather than before, showed little or no evidence of behavioral tolerance when the drug was administered before testing. This result was interpreted to indicate that the development of behavioral tolerance to marihuana involves a learning process. (Author abstract)

**131283** Uyeno, Edward T. Stanford Research Institute, Stanford, CA **Enhancement of swimming performance with delta9-tetrahydrocannabinol.** *Psychonomic Science.* 29(5):332, 1972.

At the thirteenth annual meeting of the Psychonomic Society, the enhancement of rat swimming performance with delta(9)-tetrahydrocannabinol was reported. According to their swimming times (i.e., duration of swim), 22

Wistar male rats were matched and assigned to experimental and control groups. The experimental animals were injected intraperitoneally with 2mg/kg of delta(9)-tetrahydrocannabinol dissolved in dehydrated alcohol, whereas the control animals were given the vehicle. The results of the postdrug swim test showed that the mean swimming time of the experimental group was significantly longer than that of the control group. (Author abstract)

**131284** Hrabrich, Martin B.; Heise, G. A. Indiana University, Bloomington, IN **Effects of drugs on intertrial interval behavior in delayed alternation.** *Psychonomic Science*. 29(5):332, 1972.

At the thirteenth annual meeting of the Psychonomic Society, the effect of drugs on intertrial interval behavior in delayed alternation in rats was reported. Limiting the analysis of discrete trial behavior to performance on trials ignores important factors controlling that performance. In a study of delayed alternation leverpressing, rats were observed systematically on intertrial intervals during acquisition, during maintenance, and under drugs; the results were correlated with leverpressing performance on trials. (Author abstract)

**131285** Calhoun, William H. University of Tennessee, Chattanooga, TN 37403 **Drug effects on baseline go/no-go discrimination and serial discrimination reversal learning.** *Psychonomic Science*. 29(5):332, 1972.

At the thirteenth annual meeting of the Psychonomic Society, a study of the drug effects on baseline go/no - go discrimination and serial discrimination reversal learning was reported. Baseline discrimination and serial discrimination reversal performance were used to test drug effects. Methamphetamine reduced the probability of an error (a no go response) in discrimination and serial discrimination reversal performance, and chlordiazepoxide increased the probability of an error. (Author abstract)

**131293** Satinder, K. Paul. Lakehead University, Thunder Bay, Ontario, Canada **Effects of intertrial crossing punishment and d-amphetamine sulfate on avoidance and activity in four selectively bred rat strains.** *Psychonomic Science*. 29(5):291-293, 1972.

The effects of punishing intertrial crossing (ITC) were investigated on avoidance response

and shuttlebox activity in four selectively bred strains of rats, with and without d-amphetamine sulfate. In the Maudsley nonreactive strain (MR/Har/Lu), the ITC punishment suppressed the avoidance response significantly, under both drug and nondrug conditions, but no such effects were found in the Maudsley reactive (MR/Har/Lu) and the Roman high avoidance (RHA/Lu) strains. However, d-amphetamine sulfate facilitated avoidance response in the MR/Har/Lu strain and suppressed it in the RHA/Lu. In the Roman low avoidance strain (RLA/Lu), d-amphetamine sulfate facilitated avoidance responding and activity, but in the ITC permissible group only. 6 references. (Author abstract)

**131436** Barrett, Robert J.; Ray, Oakley S. Vanderbilt University, Nashville, TN **Drug-induced facilitation of active avoidance: a behavioral explanation.** *Psychonomic Science*. 29(5):330, 1972.

At the thirteenth annual meeting of the Psychonomic Society, drug induced facilitation of active avoidance was reported. Data from seven response measures simultaneously recorded during acquisition of a Y-maze discriminated active avoidance task indicated that d-amphetamine facilitated acquisition by attenuating shock induced response suppression. No differences were observed between saline and drug animals on choice behavior. Permanent facilitation of avoidance was achieved by gradually reducing the dosage over consecutive sessions. (Author abstract)

**131445** Adams, P. M.; Barratt, E. S. University of Texas Medical Branch, Galveston, TX **The effects of a marijuana extract on two-choice discrimination learning in the squirrel monkey.** *Psychonomic Science*. 29(5):329, 1972.

At the thirteenth annual meeting of the Psychonomic Society, the effects of a marihuana extract on two choice discrimination learning in the squirrel monkey were reported. Four adult squirrel monkeys were given acquisition training on a two choice discrimination task under 0.68mg/kg delta(9)-THC or a saline vehicle control. The results indicated that the marihuana extract resulted in significantly more trials to reach a 80% correct criterion and a significantly longer response time per trial. These results are discussed with reference to the effects found with comparable dosage levels on overlearned performance tasks using similar dependent measures. (Author abstract)



**131446** Stretch, Roger; Gerker, Gary J. University of Saskatchewan, Saskatoon, Saskatchewan, Canada Schedule-dependent effects in amphetamine and morphine self-administration by squirrel monkey. *Psychonomic Science*. 29(5):329, 1972.

At the thirteenth annual meeting of the Psychonomic Society, schedule dependent effects in Amphetamine and morphine self-administration by squirrel monkeys were reported. Separate experiments have been conducted to compare patterns of self-administration behavior maintained by response-contingent intravenous infusions of either d-amphetamine or morphine sulfate. Total daily morphine intake (2mg/kg) was insufficient to engender physical dependence, but patterns of responding reinforced by discrete infusions of the drug were maintained consistently. When amphetamine infusions were replaced by saline, responding quickly diminished to a low rate; when morphine infusions were replaced by saline, self-administration behavior persisted for many consecutive sessions. Differences between morphine and amphetamine self-administration behavior, following discontinuation of drug reinforcement, are described. (Author abstract)

**131447** Jacquet, Yasuko F. no address 'Bait shyness' during morphine dependence. *Psychonomic Science*. 29(5):329, 1972.

At the thirteenth annual meeting of the Psychonomic Society, a study of bait shyness during morphine dependence in mice was reported. An attempt was made to assay the aversiveness of the course of morphine addiction in mice using the bait shyness phenomenon. The availability of fluid -- either saccharine or plain water -- was paired with twice daily injections of morphine or saline. Morphine groups significantly decreased fluid intake. Naloxone administration reversed this effect. (Author abstract)

**131448** McCluer, Robert H.; Golub, Arnold M. no address Interaction of housing conditions and cycloheximide on memory formation. *Psychonomic Science*. 29(5):329, 1972.

At the thirteenth annual meeting of the Psychonomic Society, the interaction of housing conditions and cycloheximide on memory formation was reported. Individually housed C57Bl/6J mice injected with alow (40mg/kg) dose of cycloheximide prior to one way passive avoidance training have normal memory when tested 30 min after training and intermediate memory deficits

when tested 24 h after training. Communally housed mice, trained and tested under the foregoing conditions, have substantial memory deficits both at 30 min and at 24 h after training. These results indicate an interaction between housing conditions and the effect of cycloheximide on the development of memory and raise the question of the relationship between arousal level and memory formation. (Author abstract)

**131449** Houser, Vincent P. VA Hospital, Perry Point, MD The effects of cholinergic agents upon behavior controlled by an avoidance schedule that employs signal response-independent shock. *Psychonomic Science*. 29(5):329, 1972.

At the thirteenth annual meeting of the Psychonomic Society, the effects of cholinergic agents upon squirrel monkey behavior controlled by an avoidance schedule that employs signaled response independent shock were reported. Six squirrel monkeys were subjected to a Sidman avoidance schedule that contained five response independent shocks which were preceded by a 3 min warning stimulus. Four of the animals demonstrated facilitated response rates during this stimulus, while two exhibited suppressed rates. Scopolamine hydrobromide (.5, 1.0mg/kg) reversed these patterns, while scopolamine methylbromide (.5, 1.0mg/kg) and/or pilocarpine nitrate (1.25, 2.50mg/kg) had equivocal results. (Author abstract)

**131450** Ferraro, Douglas P.; Grilly, David M. University of New Mexico, Albuquerque, NM Tolerance to delta(9)-THC under delayed matching-to-sample tasks in chimpanzees: effects of delay length. *Psychonomic Science*. 29(5):329, 1972.

At the thirteenth annual meeting of the Psychonomic Society, a study of tolerance to delta(9)-tetrahydrocannabinol under delayed matching to sample tasks in chimpanzees was reported. Five chimpanzees were given 15 consecutive daily administrations of .75mg/kg (-)-delta(9)-THC under both a 10 sec and a 20 sec delayed matching to sample task. Initial drug administrations significantly decreased matching accuracy at both delay values. Tolerance to this delta(9)-THC effect developed only under the 10 sec delay task. (Author abstract)

**132117** Miczek, Klaus A.; Grossman, Sebastian P. Department of Psychology, University of



Chicago, 5848 South University Avenue, Chicago, IL 60637 Punished and unpunished operant behavior after atropine administration to the VMH of squirrel monkeys. *Journal of Comparative & Physiological Psychology*. 81(2):318-330, 1972.

Punishment suppressed operant responding was disinhibited in two different experimental paradigms by the administration of atropine to the ventromedial hypothalamus of squirrel monkeys, but many animals failed to consume the rewards earned during periods of disinhibited responding. The drug treatment also facilitated unpunished operant responding in some situations, but inhibited punished as well as unpunished consummatory behavior. The observed pattern of effects is discussed in relation to earlier reports of the effects of atropine injections or lesions in the ventromedial hypothalamus of rats. 26 references. (Author abstract)

132159 Lecanuet, J.P.; Deweer, B.; Bloch, V. Laboratoire de Psychophysiologie, Universite de Lille, Lille, France Evidence for a consolidation process following imprinting in the one-day-old chick. *Brain Research (Amsterdam)*. 37(2):363, 1972.

Evidence for a consolidation process following imprinting was studied in 1-day-old chicks. In Experiment I the effects of fluothane anaesthesia on imprinting were investigated. Fluothane was administered to 12-14 chicks immediately after a 20 min imprinting session. This treatment produced a significant reduction in the following response, as measured three days later. Control data indicate that this effect was not due to any sensory or motor impairment during the retention session. Furthermore, the deficits decreased with increasing delays between the end of the imprinting session and the administration of fluothane, and followed a typical retrograde amnesic gradient. In Experiment II the effects of strychnine on imprinting were studied. An injection of strychnine, known to have excitatory effects, produced an increase in the following response if administered immediately after the imprinting session. This result in all likelihood cannot be attributed to possible motor effects of the drug, since only subconvulsive doses had a facilitatory effect, while higher doses produced a decrement in performance. The similarity between these results and those obtained in mammalian learning experiments suggests the existence, in imprinting as in conditioning, of a consolidation period necessary

for the establishment of long-term memory. (Author abstract)

132527 Murphree, Oddist D. Veterans Administration Hospital, North Little Rock Division, Little Rock, AR Reduction of anxiety in genetically timid dogs: drug-induced schizokinesis and autokinesis. *Conditional Reflex*. 7(3):170-176, 1972.

In behavior studies of genetically timid and normal dogs, it was possible to focus on nervous nonperforming animals in a search for agents which might attenuate the overriding anxiety which causes these animals to become rigid, aversive avoiding or bizarre in the presence of humans. Of the drugs tested, chlordiazepoxide (Librium) 75 to 200mg per dog per day, was most effective in alleviating the anxious condition. Sometimes the drug had the effect of getting the animal over a threshold so that he continued to perform (bar pressing) indefinitely after once started through the aid of chlordiazepoxide. This is considered an example of both schizokinesis and autokinesis which Gantt first described and associated with drug action utilizing conditional response techniques. 7 references. (Author abstract modified)

132680 Thoa, Nguyen B.; Eichelmann, Burr; Ng, Larry K.Y. Division of Clinical and Behavioral Research, National Institute of Mental Health, Bethesda, MD 20014 Shock-induced aggression: effects of 6-hydroxydopamine and other pharmacological agents. *Brain Research (Amsterdam)*. 43(2):467-475, 1972.

Administration of 6-hydroxydopamine (6-OHDA) to rats produced a decrease in brain catecholamines (CA) and an increase in footshock induced fighting. Desmethylinipramine reduced this effect while lessening CA depletion. Blockade of CA synthesis by either alpha-methyl-paratyrosine (AMPT) or bis(4-methyl-1-homopiperazinylthiocarbonyl)disulfide (FLA-63) did not produce any increase in shock induced fighting. D-amphetamine or L-amphetamine transiently decreased the 6-OHDA effect. L-dopa plus MK 486 effectively blocked it. Apomorphine reversed the 6-OHDA effect but was accompanied by pronounced stereotyped behavior. The results suggest that CA depletion alone is not sufficient to produce a facilitation of shock induced aggression. Degeneration of brain adrenergic terminals produced by 6-OHDA is also requisite for the observed effect. However, the 6-OHDA effect

may be transiently altered by drugs which release CA, effect the synthesis of new CA, or act directly on the CA receptor. 29 references. (Author abstract)

**132682** Myers, R.D.; Evans, J.E.; Yaksh, T.L. Laboratory of Neuropsychology, Purdue University, Lafayette, IN 47907 **Ethanol preference in the rat: interactions between brain serotonin and ethanol, acetaldehyde, paraldehyde, 5-HTP and 5-HTOL.** *Neuropharmacology* (Oxford). 11(4):539-549, 1972.

Male Royal Victoria rats were offered a choice between water or an ethanol solution which was increased by one concentration, on each day, from 3 to 30%, during repeated 11-day preference aversion sequences. In one group, 5-hydroxytryptophan was injected i.p. every 8 hours in a dose of 50mg/kg throughout the second 11-day preference sequence. Alcohol intake was suppressed below the baseline level for nine successive sequences over a 3-month interval, whereas the saline controls increased their intake during the same period. In a second group of animals, 5% ethanol, 0.5% acetaldehyde, 0.5% paraldehyde, 5.0micrograms 5-hydroxytryptophan, or 2.0micrograms of 5-hydroxytryptophol was injected in a volume of 2.0microliters into the cerebral ventricles every 15 minutes around the clock during the second and third water ethanol preference sequences. The ethanol intake increased in each group except the one which had received 5-HTP; in this latter group, the ethanol intake was reduced. The inhibitor of tryptophan hydroxylase, p-chlorophenylalanine, given in an amount of 300mg/kg every other day, produced a significant reduction in ethanol intake in the post-drug preference sequence in the ethanol infused rats, the acetaldehyde infused rats, and the 5-hydroxytryptophol infused rats. However, p-chlorophenylalanine did not alter the elevated intake of paraldehyde infused animals and enhanced the ethanol preference in 5-hydroxytryptophan infused rats. 32 references. (Author abstract modified)

**132761** Richardson, J.S.; Stacey, P.D.; Russo, N.J.; Musty, R.E. University of Pennsylvania, School of Medicine, Philadelphia, PA 19104 **Effects of systemic administration of propranolol on the timing behavior (DRL-20) of rats.** *Archives Internationales de Pharmacodynamie et de Therapie* (Ghent). 197(1):66-71, 1972.

Intraperitoneal injections of propranolol (5.0, 12.5, or 25.0mg/kg) disrupt the performance by male hooded Royal Victoria Hospital rats of an operant conditioning schedule requiring the rats to respond based on the passage of time. The injection of 0.5mg/kg of propranolol or saline had no such effect. Propranolol disruption of differential reinforcement of low response rates (DRL) performance parallels the DRL disruption reported to follow basolateral amygdaloid lesions. It is submitted that both the depression producing side-effects seen in patients taking propranolol for cardiac indications and the antianxiety effects might be due to the quinidine like action of propranolol on the amygdala. 13 references.

**132776** Winter, J.C. Department of Pharmacology, School of Medicine, State University of New York at Buffalo, Buffalo, NY 14214 **Comparison of chlordiazepoxide, methysergide, and cinanserin as modifiers of punished behavior and as antagonists of N,N-dimethyltryptamine.** *Archives Internationales de Pharmacodynamie et de Therapie* (Ghent). 197(1):147-159, 1972.

The hypothesis that tryptaminergic mechanisms are involved in the suppression of responding by punishment was tested. Six female CFN strain rats were trained to press a bar for food on a multiple schedule in which one component was food and the other was concurrent food and electric shock. Chlordiazepoxide and methysergide produced dose related increases in both the punished and the nonpunished components. Cinanserin and alpha-methyltryptamine had no rate enhancing effects and the actions of alpha-methyltryptamine were not modified by pretreatment with the peripheral antagonist of 5-hydroxytryptamine, xylamidine tosylate. These data suggest that the ability of methysergide to increase rates of punished responding is not shared by cinanserin, a nonergot tryptamine antagonist, and that the rate depressant effects of alpha-methyltryptamine are not mediated by 5-hydroxytryptamine receptors in the periphery. The ability of chlordiazepoxide, methysergide, and cinanserin to antagonize the rate depressant effects of N,N-dimethyltryptamine (DMT) was not correlated with the degree of rate enhancement produced by the administration of the drugs in the absence of DMT. It is suggested that antagonism of tryptamine is neither a necessary nor a sufficient condition for the enhancement of response rates suppressed by punishment. 16 references. (Author abstract modified)

132829 Hoffmeister, F. Institut für Pharmakologie der Farbenfabriken Bayer AG, 56 Wuppertal 1, Elberfeld, Germany /Electroencephalogram and behavior of rabbits in physiological and drug induced sleep: Part II: EEG of the rabbit in drug induced sleep./ Elektroenzephalogramm und Verhalten von Kaninchen im physiologischen und medikamentösen Schlaf: 2. Mitteilung: EEG des Kaninchens im medikamentösen Schlaf. Arzneimittelforschung (Aulendorf). 22(2):412-421, 1972.

The effects of drugs upon the sleep patterns of rabbits are discussed. Sleep prolonging efficacy occurred in the following order: nitrazepam and diazepam were greater than cyclobarbitol, methypylone, methaqualone, and promethazine; which in turn were superior to carbromal. The quality of sleep as observed by means of the EEG recording indicated that cyclobarbitol, nitrazepam, and diazepam induced a sleep which was frequently interrupted by awaking phases (EEG stage II); this was not the case with methypylone, methaqualone, carbromal, or promethazine. Paradoxal sleep is affected by large doses of methypylone and methaqualone. Large doses of nitrazepam increase paradoxal sleep very slightly, and diazepam increases that portion of paradoxal sleep at doses which do not prolong sleep. Promethazine decreases paradoxal sleep within a certain dose range. The sleep cycles are somewhat prolonged by cyclobarbitol, methaqualone, carbromal, nitrazepam, and diazepam; prolongation by methypylone is more pronounced; promethazine prolongs sleep cycles within a narrow dose range. 1 reference. (Journal abstract modified)

133131 Weischer, M.L.; Opitz, K. Institut für Pharmakologie und Toxikologie der Universität Münster, Münster, Germany /Effect of fenfluramine, chlorphentermine and related compounds on the behavior of aggressive mice./ Einfluss von Fenfluramine, Chlorphentermin und verwandten Verbindungen auf das Verhalten von aggressiven Mäusen. Archives Internationales de Pharmacodynamie et de Therapie (Ghent). 195(2):252-259, 1972.

The influence of various anorexigenic drugs and some other centrally active substances on aggressive behavior was studied in male mice which were kept isolated for at least 4 weeks. Fenfluramine, chlorphentermine, some of their derivatives, and cyproheptadine abolished fighting when given in doses corresponding 10 or 20% of the

respective LD50. Chlorphentermine and some other halogenated phenylalkylamines, but not fenfluramine and S 992, caused anxiety and timid defense behavior while the animals were rather sedated by cyproheptadine. Chlordiazepoxide displayed its well known taming effect but nevertheless had little influence on species specific aggressive behavior. 23 references. (Author abstract)

133133 Chernov, H.I.; Barbaz, B.S.; Boshek, R.L.; Feist, M.M. Research Department, Ciba Pharmaceutical Company, Summit, NJ Age and lack of handling as factors in the consumption of an etonitazene solution by naive rats. Archives Internationales de Pharmacodynamie et de Therapie (Ghent). 195(2):231-239, 1972.

Etonitazene, 1-(beta-diethylaminoethyl)-2-(p-ethoxybenzyl)-5-nitrobenzimidazole, an analgesic agent about 1000 times as potent as morphine, was administered to naive rats of various ages and weights in their drinking water, and studied under conditions of daily handling as opposed to no handling. Of the 20 animals in each weight range (150-200g, 300, 400g), 10 were handled daily; half of the animals in each group of 10 received etonitazene solution (5microg/ml) every Monday and Thursday for 6 weeks, with tap water supplied on nontest days. The other animals had tap water every day. Weight, fluid and food intake were measured daily. The results demonstrated that a behavioral pattern termed opiate-seeking was absent in some animals and present in others, and a variability among individual rats in a given test situation was noted. Neither age nor lack of handling played a role, as virtually identical results were obtained in all groups. The data regarding food intake suggested that the chronic consumption of the narcotic affected metabolic processes. The animals did not increase their consumption of the drug with time nor was there any diminution in the effect on behavioral changes (jumping, chewing the grid floor, head nods). It is suggested that the method employed could serve as a tool for studying psychological dependence in laboratory animals as an entity separate from physical dependence. 15 references.

133171 Grisham, Michael G.; Ferraro, Douglas P. Department of Psychology, University of New Mexico, Albuquerque, NM 87106 Biphasic effects of delta9-tetrahydrocannabinol on variable interval schedule performance in rats. (Unpublished paper) Research Report, NIMH Grant MH-20363, 1972, 15 p.



The dose response function for delta9-tetrahydrocannabinol (delta9-THC) was determined across a wide range of doses in rats responding under a temporal schedule of variable interval reinforcement. Four male albino rats were trained to bar-press for water reinforcement under a variable interval 60-second schedule. Nine acute administrations of (-)-delta9-trans-THC, in amounts ranging from 0.25 to 16.0mg/kg, produced dose related effects on responding; the overall response rate increased at the lower doses, while the higher doses produced ataxia and a complete suppression of responding. The increased response rates reflected changes both in response spacing and in the lengths of postreinforcement pauses. It is concluded that marihuana has a biphasic effect on variable interval, water reinforced behavior in rats. 21 references. (Author abstract modified)

133180 Tonge, S.R.; Leonard, B.E. School of Pharmacy, Liverpool Polytechnic, Brynmore Street, Liverpool, England Some observations on the behavioural effects of hallucinogenic drugs on rats: potentiation by two drugs affecting monoamine metabolism. *Archives Internationales de Pharmacodynamie et de Therapie* (Ghent). 195(1):168-176, 1972.

Phencyclidine, Ditan, LSD and mescaline were administered to Wistar rats which were subsequently subjected to behavioral tests, in order to establish the relative intensity of the effects of the hallucinogens at various times after their administration so that interactions with other drugs could be examined. The behavioral tests included conditioned avoidance, rope climbing, and visual discrimination. Responses to all four hallucinogens were: backing, excitement, and head shaking, followed by pronounced behavioral depression. In view of the difficulty in distinguishing 'hallucinogenic' activity from side-effects in specific behavioral tests, the method of assessing the effects of the hallucinogens was observation of the gross behavior. This method was used to investigate the interactions of hallucinogens and: chlorpromazine, haloperidol, tryptophan, 5-hydroxytryptophan, 5-hydroxytryptamine, p-chlorophenylalanine and methysergide; tyrosine, disulphiram, methyl-dopa, iproniazid, methyl-p-tyrosine and methyl-m-tyrosine. Methysergide and alpha-methyl-m-tyrosine were shown to strongly potentiate the behavioral effects of the hallucinogens. 14 references.

133196 Kulkarni, A.S. Department of Pharmacology, Human Health Research and Development Laboratories, Dow Chemical Company, Zionsville, IN 46077 Avoidance acquisition and CNS stimulants. *Archives of Pharmacology* (Berlin). 273(4):394-400, 1972.

Using avoidance behavior in a Skinner box, acquisition was measured in naive, male Harlan Wistar albino rats after the administration of various central nervous system (CNS) stimulants. The rats were injected i.p. with a drug 30 min prior to the acquisition session of 400 avoidance trials in the Skinner box. The ratio of correct lever responses to wrong lever responses indicated the extent of the preference the rat acquired during the training session. This relative preference was postulated not to be affected by any nonselective increase or decrease in responding. Control animals injected with saline, made approximately 200 avoidances during the session. Most drugs used in this study (caffeine, methylphenidate, pipradol, methamphetamine, ephedrine, dextroamphetamine, Mg-Pemoline) produced an increase in the number of avoidances during the session. Only caffeine at 100mg/kg produced some decrease in avoidance responses. The position discrimination and signal association ratios for each of the drugs are tabulated. A change in the ratios indicated a change in the acquisition. The ratio of avoidance to intertrial responses showed that the control animals had a ratio of 2.62; a smaller than control ratio indicated a poor discrimination of signals; subject to dosage, low results were found with caffeine (100mg), methylphenidate, pipradol, methamphetamine (2.5, 1.0mg), ephedrine (50mg), dextroamphetamine (2mg). 10 references.

133293 Brown, J.H.; Garrett, R.L. Department of Pharmacology, Louisiana State University, School of Medicine, New Orleans, LA 70112 Relative degree of tolerance to morphine sulfate and methadone hydrochloride in the rat and the interaction of dexamethasone. *Archives Internationales de Pharmacodynamie et de Therapie* (Ghent). 196(1):176-183, 1972.

The radiant heat, tail flick procedure in rats was used to quantitate tolerance and cross-tolerance developed to morphine sulfate or methadone hydrochloride. The mean control reaction time of 150 male Holtzman rats (150-185g) was 5.95 sec. The ED50 was defined as the dosage of morphine sulfate or methadone



hydrochloride that increased reaction time 4.0sec in 50% of the animals. Tolerance was induced by injecting morphine sulfate s.c. in single, daily dosages beginning at 20mg/kg on day zero and terminating at 125mg/kg on day 14; methadone hydrochloride began and ended at 5 and 45mg/kg, respectively. The ED<sub>50</sub> in mg/kg s.c. of morphine sulfate was 5.3 on day zero and 20.0 on day 14; for methadone hydrochloride these values were 1.5 and 13.5. On day 15 the ED<sub>50</sub> of methadone hydrochloride in morphine tolerant rats was 4.8 and that of morphine sulfate in methadone tolerant rats was 33.0. Thus, much greater tolerance is developed to methadone than morphine but less cross tolerance occurs with methadone in morphine tolerant rats. Dexamethasone (30microg/kg), administered i.p. on days zero to 14, reduced the ED<sub>50</sub> of morphine to 1.9 and 8.9 on day zero and 14, respectively. Dexamethasone alone had no analgesic effect on either day zero or 14 in animals not receiving morphine. Thus, dexamethasone acts synergistically with morphine on day zero but does not block tolerance. 13 references. (Author abstract)

**133298** Pradhan, S.N.; Kamat, K.A. Department of Pharmacology, Howard University College of Medicine, Washington, DC 20001 **Action and interaction of cholinergic agonists and antagonists on self-stimulation.** *Archives Internationales de Pharmacodynamie et de Therapie* (Ghent). 196(2):321-329, 1972.

The effects of several cholinergic agonists, antagonists and their combinations were investigated on electric self-stimulation of two areas of the hypothalamus in rats. The drugs were given i.p. Scopolamine facilitated self-stimulation with constant current at 0.05 to 0.5mg/kg doses and with stepping current at 0.1mg/kg dose in majority of rats. Methyloscopolamine showed inconsistent and even depressant effects at comparable doses. The cholinergic agents, arecoline (0.5 to 2mg/kg) and physostigmine (0.05 to 0.2mg/kg) depressed self-stimulation behavior. The depressant effect of physostigmine is antagonized completely by scopolamine; in four animals the stimulating effect of scopolamine was further enhanced by the combination with physostigmine. Scopolamine also potentiated the facilitatory effect of nicotine in rats with low responsiveness baseline values. Thus, a central cholinergic mechanism appears to inhibit the self-stimulation behavior, and the anticholinergics facilitate the same by disinhibiting

this effect. It is proposed that during intracranial self-stimulation of the reward areas, as in the hypothalamus, both the adrenergic excitatory (go) and the cholinergic inhibitory (no go) systems are stimulated. Self-stimulation behavior is dependent upon the balance between the activities of these systems. 12 references. (Author abstract)

**133377** Barrett, Robert J.; Leith, Nancy J.; Ray, Oakley S. Psychology Research Laboratories, Veterans Administration Hospital, 1310 24th Avenue S., Nashville, TN 37203 **Permanent facilitation of avoidance behavior by d-amphetamine and scopolamine.** *Psychopharmacologia* (Berlin). 25(4):321-331, 1972.

Scopolamine or d-amphetamine was administered daily to independent groups of male Sprague-Dawley rats 30 minutes prior to training in a discriminated, Y-maze avoidance task. A dose dependent relationship was found between the amount of avoidance facilitation and drug dosage. Discontinuation of the drug following asymptotic performance resulted in a decrement in avoidance which varied as a function of the acquisition dosage. Results from a second experiment using the same task indicated that gradually reducing the dosage on consecutive training days rather than abruptly discontinuing the drug was more effective in producing permanent avoidance facilitation in the nondrug condition. 13 references. (Author abstract modified)

**133379** Richardson, D.; Karczmar, A.G.; Scudder, C.L. Department of Pharmacology and Therapeutics, Loyola University Medical Center, 2160 South First Avenue, Maywood, IL 60153 **Intergeneric behavioral differences among methamphetamine treated mice.** *Psychopharmacologia* (Berlin). 25(4):347-375, 1972.

Methamphetamine sulfate was administered in acute and chronic experiments, either at constant or increasing doses, to mouse like rodents belonging to various genera and strains; the behavioral effects arising in a pseudo natural habitat are described. The animals studied were *Onychomys leucogaster*, *Peromyscus maniculatus* Bairdii, *Microtus ochrogaster* and four *Mus* strains, *Mus musculus* ICR, MO, C57BL/6J, and CF-1. Aggression, grooming, digging, contactual, sexual, sleeping, ingestive, exploratory, and stereotypic behaviors were quantitated. Both similarities and differences in the behavioral responses to methamphetamine of the various mice types were

noted. These responses are discussed as to their modification by tolerance or increasing doses. Certain neurological and behavioral aberrations due to methamphetamine were noted and correlations with the parameters of mice neurochemistry established in these laboratories are presented. 49 references. (Author abstract)

**133380** Bhargava, Vinod. Department of Pharmacology, Maulana Azad Medical College, New Delhi, India. **Effect of diisopropyl phosphorofluoridate (DFP) on the somatosensory evoked potentials in rats.** *Psychopharmacologia (Berlin)*. 25(4):376-379, 1972.

In male albino CFE strain rats anesthetized with pentobarbitone, somatosensory evoked potentials, produced by stimulation of contralateral or ipsilateral forepaws, were used to measure the activity in different neuronal populations. Computer derived averages of 32 consecutive responses yielded a stable and consistent measurement of the evoked potentials. The drug was applied to the cerebral cortex by using the cortical cup technique and changes were measured in the evoked potentials. Cortical application of diisopropyl phosphorofluoridate (DFP) increased the amplitude of the repetitive afterdischarges without affecting the primary complex of the evoked potentials. It appears that the afferent pathways responsible for these repetitive afterdischarges involve cholinergic synapses. 8 references. (Author abstract modified)

**133381** Bloesch, Manfred. Universitäts-Nervenklinik und Poliklinik Erlangen, Schwabachanlage 10, D-8520 Erlangen, West Germany. **The effects of some phenothiazine derivatives on the behavior of wild herring gulls. (Larus a. argentatus Pontopp)./ Über die Wirkung einiger Phenothiazine auf das Verhalten von freilebenden Silbermöwen (Larus a. argentatus Pontopp).** *Psychopharmacologia (Berlin)*. 25(4):380-387, 1972.

The effects of some phenothiazines on the behavior of wild herring gulls were studied in a large breeding colony. Motor activity increased after chlorpromazine (12-75mg/kg); the birds left their nests and walked around in their territories for some hours. The increased locomotor activity, hunched posture of the gulls and the depressed behavior of pigeons in learned discrimination test situations mentioned in the literature, suggests that chlorpromazine both activates motor systems

and depresses psychic activity in birds. After levomepromazine (25-50mg/kg), the gulls left their nests for only a few minutes, tried to spit something and continued to brood normally later on. Fluphenazine, 4mg/kg, and 2.5 to 7.5mg/kg butyrylperazine had no effect at all on open field behavior of the gulls. 29 references. (Author abstract modified)

**133471** Prado-Alcala, Roberto A.; Grinberg-Zylberbaun, J.; Alvarez-Leefmans, J.; Gomez, A.; Singer, S.; Brust-Carmona, H. Physiology Department, Faculty of Medicine and Psychology School, National University of Mexico, Mexico, 20, D.F. **A possible caudate-cholinergic mechanism in two instrumental conditioned responses.** *Psychopharmacologia (Berlin)*. 25(4):339-346, 1972.

Two series of experiments were performed in cats in which 80 microg of atropine in 5 microl were injected into the head of both caudate nuclei. In order to obtain a reward (a constant amount of milk) the first group of subjects learned to walk a distance of 75cm after the delivery of four flashes, while the second group learned to press a lever. Both tasks were significantly impaired after atropine injection. The motor reflex response as well as hunger motivation were not modified by the substance. A caudate cholinergic mechanism involved in the maintenance of motor conditioned responses is proposed. 15 references. (Author abstract modified)

**133473** Olds, M.E. Division of Biology, California, Institute of Technology, Pasadena, CA 91109. **Alterations by centrally acting drugs of the suppression of self-stimulation behavior in the rat by tetrabenazine, physostigmine, chlorpromazine and pentobarbital.** *Psychopharmacologia (Berlin)*. 25(4):299-314, 1972.

The effects of pretreatment with d-amphetamine, scopolamine, and chlordiazepoxide were studied on the suppression of self-stimulation behavior in 32 male adult albino Holtzman rats by central depressants. The antagonism of each compound was determined against the suppressant action of tetrabenazine, physostigmine, chlorpromazine and pentobarbital sodium. Against the suppression produced by tetrabenazine, only d-amphetamine gave partial protection throughout the test. Against the suppressant effect of chlorpromazine, protection was given by d-

amphetamine, scopolamine, and chlordiazepoxide. Against physostigmine, scopolamine gave full protection, d-amphetamine partial protection, and chlordiazepoxide without effect. Against the effect of pentobarbital on self-stimulation behavior, there was no protection by d-amphetamine and scopolamine when the animal showed motor deficits, and a stimulant action when these had worn off, but the rates of responding were still depressed. Chlordiazepoxide potentiated the action of pentobarbital. The results are interpreted in terms of a short run protective action against changes produced by the compounds suppressing self-stimulation behavior in levels of transmitter like substances. 16 references. (Author abstract modified)

133521 Johnson, F.N. Department of Psychology, University of Birmingham, P.O.Box 363, Birmingham B15 2TT, England Dissociation of vertical and horizontal components of activity in rats treated with lithium chloride. *Experientia* (Basel). 28(5):533-535, 1972.

Experiments were conducted in which lithium induced effects on vertical rearing in rats were contrasted with effects on horizontal locomotory activity in the same subjects, and the relationship between rearing and environmental stimulation was examined. In the first experiment, lithium chloride reduced rearing frequency in rats under relatively restrictive test conditions without a discernible effect upon horizontal locomotory activity. In the second experiment this differential effect on the two types of activity was proven to be no artifact of the test situation. The third experiment demonstrated that rearing occurred in response to environmental stimuli, which was not the case in locomotory activity. Thus, lithium chloride acted to suppress selectively activity which was stimulus controlled. It is submitted that lithium may impair sensory reception, or it may disrupt central, cortical analysis of sensory information. 5 references.

133522 Carlini, E.A.; Gonzalez, C. Departamento de Bioquímica e Farmacologia, Escola Paulista de Medicina, Caixa Postal 7144, Sao Paulo, Brazil Aggressive behaviour induced by marihuana compounds and amphetamine in rats previously made dependent on morphine. *Experientia* (Basel). 28(5):542-544, 1972.

An investigation was carried out to observe whether cannabis would induce aggressive

behavior in nonstarved rats during withdrawal from previous morphine administration, and to determine the type of aggressive behavior induced. Both delta9-trans-tetrahydrocannabinol (THC) and a marihuana extract induced aggressiveness in rats which were in abstinence from morphine, when this latter treatment was extended over a 60-day period. THC was more efficient than amphetamine in provoking aggression in the rats. With THC treatment the animals were more vicious, attacking inanimate objects with ferocity. It is submitted that the strong stress suffered by the rats undergoing morphine withdrawal is the factor associated with the THC capacity to induce aggressiveness in these animals. 9 references.

133524 Keenan, A.; Johnson, F.N. Department of Psychology, University of Birmingham, P.O.Box 363, Birmingham B15 2TT, England Development of behavioural tolerance to nicotine in the rat. *Experientia* (Basel). 28(4):428-429, 1972.

Sixteen male rats were studied to determine the effects of nicotine administration under test conditions to which the animals had been exposed prior to the present experiments. Rearing activity was measured by a special apparatus designed for this purpose; each rat was given a total of six daily 10-minute exposures to the apparatus and tested for nicotine effects after this adjustment period. The dosage of nicotine received by the experimental group was 0.5mg/kg of nicotine hydrogen tartrate in saline by s.c.injection; control animals received only saline. The sequence of drug injection followed by exposure to the test situation was repeated for 10 consecutive days. On the eleventh day the drug and control conditions were reversed: the animals which had been given nicotine received saline before testing, and the control animals were given nicotine. Nicotine initially reduced rearing frequency but the effect diminished until, after nine days there was no difference between the two groups. Rearing frequency in the group which had previously received nicotine was significantly increased when saline was substituted. Nicotine withdrawal produced a rebound effect in a direction opposite to the original drug reaction. It is possible that animals can counteract drug effects by making behavioral adjustments. 13 references.

133547 Henriksson, Bengt G.; Jarbe, Torbjorn. University of Uppsala, Slottsgränd 3, S-752 20



Uppsala, Sweden **Delta9-tetrahydrocannabinol used as discriminative stimulus for rats in position learning in a T-shaped water maze.** *Psychonomic Science*. 27(1):15-16, 1972.

Rats were trained to swim differentially to either of the two arms of a T-shaped water maze on the basis of delta9-tetrahydrocannabinol or solvent only. The two states, drugged (D) and non-drugged (ND), were changed from day to day. After 11-13 sessions, the animals performed the task at virtually the 100% level, i.e., the imposed state (D or ND) determined the choice of arm in the T-maze. After 2 weeks of rest, the animals were retested in both the D and ND states, and the results indicate that this differentially controlled performance is very well retained. 4 references. (Author abstract)

133624 Bucci, Luigi. Clinic at New York Medical College, Rome, Italy **The effects of tranlycypromine and chlorpromazine upon the spontaneous motor activity of mice.** *Behavioral Neuropsychiatry*. 4(3-4):12-13, 21, 1972.

The potentiating effect of tranlycypromine upon the sedative effect of chlorpromazine has been demonstrated by means of a different technique. The experimental observation that tranlycypromine potentiates both the sedative and the deconditioning effect of chlorpromazine is discussed and a working hypothesis is suggested. 12 references. (Author abstract)

133655 Schechter, M.D.; Winter, J.C. Department of Pharmacology, University of Melbourne, Parkville, Victoria 3052, Australia **Effect of BOL on the LSD-induced alteration of flicker discrimination.** *Archives Internationales de Pharmacodynamie et de Therapie* (Ghent). 196(1):64-69, 1972.

CFN strain female rats were trained on a multiple schedule of positive reinforcement. A stimulus light source flickering at 100 cycle/sec provided the discriminative stimulus (Sd). Under the Sd condition, reinforcement was contingent upon an FR10 schedule. The same light source flickering at 30 cycle/sec constituted the S-delta condition. Brom-lysergic acid diethylamide (BOL), at doses of 1 and 3 microgmol/kg BOL significantly decreased it. A dose of 0.2 micromol/kg lysergic acid diethylamide (LSD), which by itself elevated discriminative ability, was shown not to be affected by coadministration of the three doses of

BOL. The results indicate that BOL lacks LSD like effects in this test system and the LSD congener is incapable of antagonizing the LSD induced alteration of discrimination when coadministered. 14 references. (Author abstract)

133674 Aleksidze, N.G.; Meshvelishvili, D.F.; Beletskaya, R.P. Gruzinskaya Akademia Nauk, Tbilisi, Gruzinska S.S.R., U.S.S.R. **The effect of transamine on the monoaminoxidase activity and psychoneural behavior in rats in a labyrinth.** *O vliyaniy transamina na monoaminoksidaznuyu aktivnost' i na psikhonervnoye pobedeniye krysa v labirinte.* *Soobshcheniya Akademii Nauk Gruzinskoy SSR* (Tbilisi). 67(1):193-195, 1972.

Transamine was introduced intraperitoneally in rats in order to determine its effects on memory and other manifestations of neural behavior. After 40 min psychoneural behavior deteriorated by approximately 58%. On the following day memory improved somewhat 48 hrs after administration of transamine when the capability to solve maze problems approached normal. A strong inhibition of MAO activity took place in all brain hemispheres 40 min after injection of transamine. Inhibition lasted for 24 hrs. The degree of inhibition was practically the same during the 24 hrs. After 48 hrs a tendency of establishing MAO activity was observed. After 72 hrs a clear reactivation of the white matter of the lobal subcortex, thymus, and cervical region was observed. Disturbance of performance in the labyrinth coincided with MAO inhibition. The tests did not lead to discovery of the interrelationship between psychoneural behavior and the level of MAO activity in different cortical regions and in the white matter of the subcortex in rat brain. 9 references.

133679 Glick, Stanley D.; Greenstein, Stuart. Herbert M. Singer Lab. of Neurosciences and Addictive Diseases, Beth Israel Medical Center, New York, NY **Pharmacological inhibition of eating, drinking and prandial drinking.** *Behavioral Biology*. 8(1):55-61, 1973.

Rats deprived of both food and water for 24 hr were allowed to eat and/or drink for 2 hr beginning 15 min after saline or drug administration. D-amphetamine inhibited eating but only prandial drinking. Scopolamine depressed eating and drinking independently of each other. Mecamylamine produced a selective decrement in prandial drinking. These and other data indicate that

adrenergic and cholinergic synapses are each involved in central regulation of both food and water intake; furthermore, there appear to be separate cholinergic mechanisms for prandial and nonprandial drinking. 11 references. (Author abstract)

**133714** Komisaruk, Barry R.; Beyer, Carlos. Institute of Animal Behavior, Rutgers--The State University, Newark, NJ 07102 **Differential antagonism, by MER-25, of behavioral and morphological effects of estradiol benzoate in rats.** *Hormones and Behavior*. 3(1):63-70, 1972.

The effectiveness of 1-(p-2-diethylaminoethoxyphenyl)-1-phenyl-2-p-methoxyphenylethanol (MER-25) in antagonizing the effect of estradiol benzoate on lordosis, sexual receptivity, uterine growth, and the vaginal smear were investigated in mature, ovariectomized Sprague-Dawley rats. MER-25 (25 or 75mg/kg for 10 days) completely antagonized the stimulating effects of estradiol benzoate on mating behavior and uterine weight. However, the estrogen antagonist was relatively ineffective in antagonizing the lordosis response induced by cervical probing and flank-perineum stimulation in the same animals. The vaginal smears of these rats were only partially cornified and contained nucleated epithelial cells similar to those seen in proestrus. These findings suggest that the lordosis response to cervical probing and the partial vaginal smear effects are more responsive to estradiol benzoate, and hence less susceptible to the estrogen antagonistic effect of MER-25, than are mating behavior, uterine weight, or full vaginal cornification. 11 references. (Author abstract modified)

**133725** Thompson, Donald M. Georgetown University School of Medicine, 3900 Reservoir Road, N.W., Washington, D.C. 20007 **Enhancement of progressive-ratio performance by chlordiazepoxide and phenobarbital.** *Journal of the Experimental Analysis of Behavior*. 17(2):287-292, 1972.

In study of the enhancement of progressive - ratio performance by chlordiazepoxide and phenobarbital, the key pecking of two pigeons was reinforced with food on a progressive - ratio schedule, which required an increasing number of responses for each successive reinforcement. When the subject failed to complete the next ratio in the sequence within 60 minutes, the session terminated. The number of responses in the final

completed ratio was defined as the breaking point. After the breaking point had stabilized (60 sessions), it served as a baseline to assess the effects of varying doses (5-80mg/kg) of chlordiazepoxide and phenobarbital, administered intramuscularly 30 minutes before the sessions. Both drugs increased the breaking point. The dose effect curves were inverted U's, with maximum enhancement of performance occurring at 20mg/kg for chlordiazepoxide and at 40mg/kg for phenobarbital. A comparable enhancement was not obtained during a nondrug probe session conducted after the body weights of the subjects had been temporarily reduced from 80-70% of their free feeding weights. The drug induced enhancement of the breaking point was related to the initial values of the performance and may represent a reduction in the aversiveness of the schedule. 15 references. (Author abstract)

**133726** Glick, S.D.; Zimmerberg, B. Department of Pharmacology, Mount Sinai School of Medicine, New York, NY 10029 **Amnesic effects of scopolamine.** *Behavioral Biology*. 7(2):245-254, 1972.

In a study of the amnesic effects of scopolamine, retention of a passive avoidance response in mice was impaired when scopolamine (10mg/kg) was administered immediately after training. Methyloscopamine (10mg/kg) produced no deficit. The strength of learning was varied by employing low shock during training or detention in the apparatus after training. There was no amnesic effect of scopolamine with low shock although the effect of the drug was enhanced following detention. Administration of scopolamine 15 minutes prior to training also impaired retention. This latter, much larger, effect was partially antagonized by administration of physostigmine immediately after training. The results are discussed in terms of a modulatory role of cholinergic processes in the storage of memories. 9 references. (Author abstract)

**133753** De Wied, D.; Greven, H.M.; Lande, S.; Witter, A. Rudolf Magnus Institute for Pharmacology, University of Utrecht, Vondellaan 6, Utrecht, The Netherlands **Dissociation of the behavioural and endocrine effects of lysine vasopressin by tryptic digestion.** *British Journal of Pharmacology* (London). 45(1):118-122, 1972.

The effects of (8-lysine)-de-9-glycinamide-vasopressin (DG-LVP) and lysine vasopressin

(LVP) on the extinction of an active avoidance response in rats were studied. It was found that both peptides delay the extinction of the avoidance response, and that the effect increases as a function of the dosage; the highest dose of each maintained the avoidance response for 12 days. It was also determined that DG-LVP is only about one half as potent as LVP. The pressor releasing, antidiuretic releasing, oxytocic releasing, and corticotrophin releasing factor activities of DG-LVP were subsequently investigated. It was found that the digestion of lysine vasopressin with trypsin almost completely destroys the factor activities of the peptide, but does not materially influence its effect on the maintenance of an avoidance response. It is concluded that LVP and DG-LVP are unique in their long-term influence on the maintenance of avoidance response and the DG-LVP will be of value in the investigation of the mechanism(s) underlying the retention of behavioral responses. 17 references.

133770 Carder, Brooks; Olson, James. Department of Psychology, University of California, Los Angeles, CA 90024 **Marihuana and shock induced aggression in rats.** *Physiology & Behavior*. 8(4):599-602, 1972.

On the assumption that marihuana strongly increases shock induced aggression, experimentally naive, male Sprague-Dawley rats were used in a study designed to measure the demonstrated aggression. Rats treated with marihuana extract to yield 1-delta9-THC doses of 0.25 and 0.50mg/kg fought more than controls in a shock induced aggression situation. A dose of 0.12mg/kg was ineffective, while doses of 1.00 and 2.00 suppressed fighting. When animals were familiarized with the test situation, the drug, or both, increases in aggression were not produced by the drug. 6 references. (Author abstract)

134101 McDowell, A. A.; Chang-Yit, R. H.; Conde, Y. 1608 South 12 Street, Moorhead, MN 56560 **Chronic effects of single nitrogen mustard injection on the activity response of albino rats.** *Journal of General Psychology*. 88:71-75, 1973.

The effect of a single intraperitoneal injection of methylchloroethamine on the long-term activity response of immature, male, Holtzman albino rats was determined. The 10 experimental Ss showed a significant progressive decline in activity up to 110 days after injection. The activity of the control Ss over the same period showed ran-

dom variation. A subsidiary finding was a significantly faster weight gain for the experimental Ss than for the control Ss. 4 references. (Author abstract)

134104 Gauron, Eugene F.; Rowley, Vinton N. Department of Psychiatry, State Psychiatric Hospital, 500 Newton Road, Iowa City, IA 52240 **Effectiveness of diazepam and methylphenidate in multiple dosages in modifying infant trauma effects.** *Journal of General Psychology*. 88:3-12, 1973.

Albino rats in independent studies were administered varying dosages of diazepam and methylphenidate prior to a daily shock traumatization experience in infancy. All animals were tested on avoidance conditioning in adulthood. Both drugs were found to be effective in modifying the typically obtained shock deficit. The results failed to substantiate that increased dosage level resulted in more effective modification of trauma effects. Delayed consequences of methylphenidate administration included modification of central nervous system reactivity as manifested in quicker reaction times and growth depression as manifested in lessened body weights in this group in comparison to the diazepam group. An additional feature of the study was the finding that male and female animals responded differently to the drug and shock experiences. 7 references. (Author abstract)

## 05 TOXICOLOGY AND SIDE EFFECTS

120124 Osuide, Gabriel. Dept. of Pharmacy and Pharmacology, Ahmadu Bello Univ., Zaria, Nigeria **Effects of gamma-hydroxybutyrate on chick behaviour, electrocortical activity and crossed extensor reflexes.** *British Journal of Pharmacology* (London). 44(4):593-604, 1972.

Convulsant and anticonvulsant effects of gamma-hydroxybutyrate (GHB) was studied in chicks. When administered alone, GHB produced weak myoclonic seizures accompanied by electrocortical synchrony and spikes. GHB was found to protect chicks against leptazol and picrotoxin induced seizures. A slight potentiation of strychnine induced seizures was evident. 24 references. (Author abstract)

120399 Geller, Irving. Department of Experimental Pharmacology, Southwest Foundation for Research and Education, San Antonio, TX 78284



**Ethanol consumption by rats under different lighting conditions.** *Science*. 175(4026):1144, 1972.

A reply is presented to an article by J. D. Sinclair concerning the ethanol consumption by rats under different lighting conditions. It is felt that although Sinclair has not substantiated many of his criticisms of a previous study, he has extended previous observations by demonstrating that the effects of darkness may be modulated by an age related variable. 1 reference.

**121179 Sinclair, John G.** Faculty of Pharmaceutical Sciences, University of British Columbia, Vancouver 8, B.C., Canada **The effects of meperidine and morphine in rabbits pretreated with phenelzine.** *Toxicology and Applied Pharmacology*. 22(2):231-240, 1972.

Experiments were conducted in order to determine whether morphine would cause the fatal hyperpyrexia in monoamine oxidase inhibitor (MAOI) pretreated rabbits that meperidine and imipramine have been found to produce. Meperidine 5mg/kg in vivo and imipramine 5mg/kg in vivo produced motor restlessness, tremor, and fatal hyperpyrexia in rabbits pretreated with phenelzine 30mg/kg for 2 consecutive days. On the other hand, morphine, in a total dose of 15mg/kg in vivo, produced calmness, respiratory depression, and no hyperpyrexia in the phenelzine pretreated rabbits. The following potential antagonists were administered in vivo 30 minutes prior to meperidine in phenelzine pretreated animals: nalorphine HCl 1mg/kg, propranolol HCl 5mg/kg, methysergide bimalate 1mg/kg, BOL-148 1mg/kg, phenoxybenzamine HCl 10mg/kg, and chlorpromazine HCl 5mg/kg. Of these agents, nalorphine potentiated the onset of hyperpyrexia, while all the others had an antagonistic action (chlorpromazine being the most effective). However, propranolol potentiated the development of the imipramine-phenelzine interaction. The evidence favors the involvement of 5-hydroxytryptamine (5-HT) in the development of the meperidine - MAOI interaction. Accordingly, meperidine but not morphine potentiated the hyperpyrexia induced by the 5-HT precursor, 5-hydroxytryptophan. 27 references. (Author abstract)

**121286 Krawitt, Edward L.; Stubbart, Patricia A.** Department of Medicine, College of Medicine, University of Vermont, Burlington, VT 05401 **The effect of phenobarbital on intestinal calcium trans-**

**port.** *Proceedings of the Society for Experimental Biology and Medicine*. 140(2):420-422, 1972.

To determine the effect of phenobarbital administration on intestinal calcium transport within the rat intestine, experiments were performed using an in vitro everted gut sac technique as a measure of transport. The results indicate that duodenal and ileal transport are not affected by phenobarbital administration in rats raised on a diet adequate in calcium and vitamin-D. Duodenal absorption is, however, suppressed in animals raised on a diet deficient in vitamin-D. The administration of phenobarbital does not interfere with the expected rise in calcium transport when vitamin-D is administered to vitamin-D deficient animals. The depression in calcium transport produced by phenobarbital in vitamin-D deficient animals appears to be mediated independently of the vitamin-D metabolic pathway. 8 references. (Author abstract)

**121579 Beall, James R.** Mammalian Development Section, Schering Corporation, Lafayette, NJ 07848 **Study of the teratogenic potential of diazepam and SCH 12041.** *Canadian Medical Association Journal* (Toronto). 106(10):1061, 1972.

In a letter to the editor results of a study on the teratogenic potential of diazepam (Valium) and a related compound (SCH-12041) are discussed. Dose levels in rats were 2, 50, and 200mg/day for SCH-12041 and 20 and 80mg/kg/day for Valium. The drugs were given orally during the period of organogenesis, i.e., days 6 through 15 after mating. On day 21, the dams were sacrificed and the offspring removed, weighed, and evaluated for gross abnormalities and internal defects. All dams remained healthy and appeared normal during the study. Neither drug had any effect on: 1) the number of rats which became pregnant; 2) the number of nidation sites or resorptions, or 3) the average litter size. Neither drug was found to be teratogenic. Of over 1,500 offspring produced, only two were abnormal; one control pup had a cleft palate and one pup from the high dose SCH-12041 group was born without a tail. A similar study of SCH-12041 only was performed using albino rabbits. Neither the course of pregnancy nor the development of offspring was affected even when the high dose was sufficiently large to inhibit weight gain in some of the dams. 3 references.

**121647** Japundzic, I.; Mimic-Oka, J.; Japundzic, M. Institute of Biochemistry, Medical Faculty, Belgrade, Yugoslavia **Increased hepatic phosphoprotein phosphatase activity induced by phenobarbital and its suppression by cycloheximide and SKF 525-A.** *Biochemical Pharmacology* (Oxford). 21(10):1477-1483, 1972.

Daily doses of 100mg/kg body weight of phenobarbital induced a significant increase in liver phosphoprotein phosphatase activity in male albino rats after the fourth injection, with a plateau reached after the fifth dose. The rate of induction and the magnitude of response were found to depend upon the daily doses of phenobarbital. The marked sensitivity of the enzyme induction to cycloheximide suggests that the formation of new enzyme protein is involved in the process. SKF 525-A administered 40 minutes before phenobarbital completely suppressed the induced increase of phosphoprotein phosphatase. An additional series of phenobarbital injections administered to pretreated rats after an interval of 5 days, when regression of drug metabolizing enzymes and of phosphoprotein phosphatase has been reached, provoked an even more pronounced increase in the enzyme activity than did the original treatment. 9 references. (Author abstract modified)

**122394** Cavero, I.; Kubena, R.K.; Dziak, J.; Buckley, J.P.; Jandhyala, B.S. Dept. of Pharmacology, School of Pharmacy, Univ. of Pittsburgh, Pittsburgh, PA 15213 **Certain observations on interrelationships between respiratory and cardiovascular effects of (-)-delta9-trans-tetrahydrocannabinol.** *Research Communications in Chemical Pathology and Pharmacology*. 3(3):483-492, 1972.

The effects of (-)-delta9-trans-tetrahydrocannabinol (delta9-THC), a pharmacologically active constituent of marijuana, on the cardiovascular and respiratory system was investigated in mongrel dogs under pentobarbital anesthesia. Delta9-THC (5mg/kg, i.v.) caused a transient hyperpnea and hypoxic hypoxia in spontaneously breathing animals; however, no alterations in the blood gas parameters were observed in artificially ventilated animals. The delta9-THC induced hypotension reached its maximum within 15 minutes in animals maintained at a constant arterial pO<sub>2</sub>, but this effect was significantly attenuated during the hypoxemic state in the spontaneously breathing animals. The present data suggest that the full

hypotensive activity of delta9-THC may be prevented by hypoxic hypoxia, however, the bradycardic effect of this compound was profound and independent of any alterations on blood gas parameters. 9 references. (Author abstract)

**125259** Mitrofanov, V.S.; Runova, M.F. Gruppa morfologii laboratorii farmakologii ser-dechnosousidistoy sistemy Instituta farmakologii AMN SSSR, Moscow **/Morphological data on the toxicity of fluphenazine./** *Morfologicheskiye dannyye o toksichnosti ftorfenazina. Farmakologiya i Toksikologiya* (Moskva). 35(2):148-149, 1972.

Tests were carried out on rats to determine the toxicity of fluphenazine on the morphological pattern. Repeated (for 35 days) subcutaneous administration of the preparation in an effective single dose (0.5mg/kg) does not appreciably effect the growth of the animals, has no local irritating effect and does not produce any appreciable changes in the blood pattern. (Journal abstract modified)

**127206** Rosenman, S. J.; Smith, C. B. Department of Pharmacology, University of Michigan Medical School, Ann Arbor, Michigan 48104 **14C-Catecholamine synthesis in mouse brain during morphine withdrawal.** *Nature* (London). 240(5377):153-155, 1972.

Using labelled 14C-catecholamines in mice, the relationship between catecholamine synthesis and morphine administration, tolerance, and withdrawal was determined. Continued morphine administration not only produced tolerance to the specific effects of the drug but produced physical dependence as well. After nine injections of morphine, the mouse brain could not synthesize normal amounts of labelled catecholamines from labelled tyrosine without the continued administration of morphine. It was concluded that optimal synthesis and turnover of 14C-catecholamines in the brain of the morphine tolerant mouse are dependent upon the continued administration of morphine. 6 references.

**130856** Johnson, James Terry; Leeming, Frank C.; Sewell, William R. Virginia State College, Petersburg, VA **Effect of methamphetamine on water consumption.** *Perceptual and Motor Skills*. 35(3):816-818, 1972.

The effect of methamphetamine on water consumption in rats was studied. Comparison of water consumption by albino rats showed that decreases induced by ingestion of amphetamine were limited to the period of action of the drug and are compensated for once drug effects have dissipated. 7 references. (Author abstract modified)

**133181** Prabhu, V.G. Department of Pharmacology, Chicago College of Osteopathic Medicine, Chicago, IL Amphetamine aggregation effect in mice under conditions of altered microsomal enzymes. *Archives Internationales de Pharmacodynamie et de Therapie* (Ghent). 195(1):81-86, 1972.

A study was conducted to determine if aggregation induced d-amphetamine toxicity in mice is modified under conditions of experimentally induced or suppressed microsomal enzymes. Hexobarbital sleeping time was used as an *in vivo* index of microsomal enzyme activity. For microsomal enzyme induction separate groups of mice were injected daily with phenobarbital (60mg/kg) and chlordan (100mg/kg) for 4 consecutive days; d-amphetamine toxicity determinations were made on the 5th day. For microsomal enzyme inhibition the mice were injected with B-diethyl amino ethyl diphenyl acetate (SKF 525-A) in doses of 25-50mg/kg, 30min prior to hexobarbital and d-amphetamine testing. A single dose of d-amphetamine (10mg/kg) in aggregated mice caused extreme excitement, squeaking, 'fighting' lachrymation, salivation and eventually death in about 80% of the mice. Death was preceded by a phase of intense exhaustion and depression. In isolated mice, there was excitement and increased locomotor action but no deaths. The aggregated mice pretreated with SKF 525-A reacted with great intensity to d-amphetamine, and deaths occurred sooner; in isolated mice, the cumulative toxicity of d-amphetamine in the presence of SKF 525-A was also higher than in the control group. SKF 525-A prolonged, while phenobarbital and chlordan decreased, the hexobarbital effect. Several mechanisms are hypothesized as possible explanations for the d-amphetamine toxicity. 35 references.

**133290** Dewey, W.L.; Harris, L.S.; Kennedy, J.S. Department of Pharmacology, School of Medicine, University of North Carolina, Chapel Hill, NC 27514 Some pharmacological and tox-

icological effects of 1-trans-delta8 and 1-trans-delta9-tetrahydrocannabinol in laboratory rodents. *Archives Internationales de Pharmacodynamie et de Therapie* (Ghent). 196(1):133-145, 1972.

Pharmacological activity of delta8- and delta9-tetrahydrocannabinol (delta8-THC, delta9-THC) is described and methods are included for: preparation of suspension, acute toxicity, isolated ileum, kinetic studies in the isolated jejunum, vas deferens, charcoal meal test, mouse tail flick procedure, hot plate test and abdominal stretching test. The results indicate that delta8- and delta9-THC have significant pharmacological activity at low doses and that lethal doses in male Sprague-Dawley rats are very high. The inhibition seen with these compounds was nonspecific; they did not alter the hypotensive response of acetylcholine in the anesthetized dog. However, delta9-THC, and to a lesser extent delta8-THC, did inhibit the movement of charcoal meal in male Swiss Webster mice. Lower concentrations of delta9-THC potentiated the response of isolated vas deferens to an epinephrine challenge but the highest contraction tested was inhibitory. Delta8-THC was relatively inactive at the doses tested. The results of the analgesic tests suggest that delta8-THC and delta9-THC have some analgesic activity, and that they differ from morphine and other narcotic analgesics. 24 references.

**134327** Carter, Thomas N. VA Hospital, Topeka, KS The relationship of lithium carbonate to psoriasis. *Psychosomatics*. 13(5):325-327, 1972.

Three cases are reported which indicate a possible causal relationship between lithium carbonate treatment to mania and schizophrenia exacerbation of psoriasis. A 41-year-old man with chronic undifferentiated schizophrenia with frequent episodes of marked hyperactivity, a 43-year-old man with manic-depressive psychosis, and a 65-year-old man with a chronic anxiety reaction were studied. It is suggested that lithium carbonate may block the action of methotrexate, which all three patients received and which inhibits the rapidly dividing epithelial cells in psoriasis. Although no definite conclusion can be made, further research in this area is encouraged. 11 references.

#### 06 METHODS DEVELOPMENT

**119022** Law, N.C.; Fales, H.M.; Milne, G.W.A. Suburban Hospital and Laboratory of Chemistry, National Heart and Lung Institute, National In-



stitutes of Health, Bethesda, MD Identification of drugs taken in overdose cases. *Clinical Toxicology*. 5(1):17-21, 1972.

A method has been devised whereby drugs taken in overdose can be identified within 30 minutes to 3 hours by means of gastric content samples taken from the overdose patients and, in the form of gas chromatographic effluent, admitted into a mass spectrometer. The mass spectra of the components of the ingested drug are then recorded as they emerge one by one from the gas chromatograph. Although gastric contents are by far the most promising sources of large quantities of the unchanged drugs, first gastric lavages, serum samples, and urine samples can also be used for the identification. The likelihood of a correct identification of the drug in question decreases when serum and urine samples are used, however. Of the overdose drugs which have been identified by this method, barbiturates were the most commonly found. Some of the other commonly found drugs were tranquilizers, analgesics, antihistaminics, glutethimide, and ethchlorvynol. It is also noted that plasticizers were frequently encountered in biological samples. The most common of these are di-n-butyl phthalate and di(2-ethylhexyl) phthalate (di-iso-octyl phthalate). The method of identification herein described does not lend itself to the identification of other toxic materials such as alcohol, metal ions, and bromides. 2 references.

**119053** Noonan, James S.; Blake, Jerry W.; Murdick, Philip W.; Ray, Richard S. Equine Research Center, Dept. of Veterinary Clinical Sciences, College of Veterinary Medicine, Ohio State University, Columbus, OH 43210 Bromination of phenothiazine tranquilizers: a method for sensitive and specific detection. *Life Sciences*. 11(7):363-373, 1972.

A method for the detection of phenothiazine tranquilizers in blood uses liquid-liquid extraction, direct bromination, and detection by electron capture gas chromatography. The sensitivity of the method extends into the picogram/ml range and can be used to determine the concentrations of promazine, acepromazine, and trifluorpromazine. When tested on blood samples drawn from horses, the method proved rapid and highly accurate. 28 references.

**121284** Rosenkrantz, Harris; Thompson, George R.; Braude, Monique C. Mason Research In-

stitute, Worcester, MA 01608 Oral and parenteral formulations of marijuana constituents. *Journal of Pharmaceutical Sciences*. 61(7):1106-1112, 1972.

An investigation into the useful vehicles for the administration of tetrahydrocannabinols and crude marihuana was conducted. It was found that pure delta9-tetrahydrocannabinol and delta8-tetrahydrocannabinol could be quantitatively handled by chipping samples at 4 degrees C transferring them to cold receptacles for weighing, and, after liquifying the cannabinoid at 50 degrees C adding a warmed vehicle for further transfers and final dilution. Tetrahydrocannabinol samples larger than 10g were liquified at 55 degrees C and poured directly into a tared receptacle. Crude marihuana extract samples were smeared on tared receptacles and diluted and transferred as above. Stock solutions of cannabinoid in sesame oil were stable for months and could be used directly for oral administration or for formulating injectables. Suitable emulsions for parenteral use consisted of sesame oil plus polysorbate 80 in saline containing up to 4% tetrahydrocannabinol or sesame oil plus polyvinylpyrrolidone containing approximately 1% cannabinoid. Such an approach incorporated an innocuous vehicle, did not require the presence or removal of an organic solvent, provided wide latitude for needed concentrations of cannabinoid, and was timesaving. The ratio of emulsifier and cannabinoid was critical for stable emulsions. 40 references. (Author abstract modified)

**126934** Fisher, Seymour. Boston University, Boston, MA /Introduction to scientific models and psychopathology./ Introduction. *Seminars in Psychiatry*. 4(3):191-192, 1972.

The plenary program for the tenth annual meeting of the American College of Neuropsychopharmacology consisted of two discussion panels. In the first, models of psychopathology were discussed; in the second, the practical utility of available models was evaluated. This introduction to the published proceedings reviews the rationale for the use of models and presents their advantages and limitations with the particular admonition that models must be considered and evaluated in the context of their specific purposes.

**129211** Miyamoto, Kanji. National Musashino Research Institute of Mental and Nervous Diseases, Kodaira, Tokyo, Japan Blood levels of antiepileptic drugs - chemical determination of an-

**antiepileptic drugs in body fluids.** Clinical Psychiatry (Tokyo). 14(5):427-437, 1972.

An introduction to the methodology of chemical determination of antiepileptic drugs in body fluids is presented. Topics include a brief history of development of antiepileptic drugs; the relationship between the dosage of antiepileptic drugs and concentration in the blood; the methodology of chemical determination of antiepileptic drugs, including Dill's method of color comparison, Walker's method of quantitative estimation of drug concentration in blood by ultraviolet spectrophotometry, Wallace's method of spectrophotometric determination of diphenylhydantoin and phenobarbital in biologic specimens; determination by thin layer chromatography of drugs by Olesen, Huisman, Vedso, etc.; Brochmann and Hanssen's separation and identification of drugs by means of gas liquid chromatography; and a modified gas chromatography method devised by Miyamoto, Kiyono, Yamagami, Ikeda. 35 references.

**130184** Peel, Harold Warren. University of Maryland The analytical toxicology of ethchlorvynol. (Ph.D. dissertation). Dissertation Abstracts International. Ann Arbor, Mich., Univ. M-films, No.72-21129 HC\$10.00 MF\$4.00 73p.

Qualitative and quantitative methods of analyzing the toxicology of ethchlorvynol were investigated. Two methods were developed that were applicable to fresh, putrid, or embalmed tissue. A facile screening method using microdiffusion was also developed, which could be used for semiquantitative results. The first method involved the steam distillation of ethchlorvynol from acidified fluid and tissue directly into a semicarbazide reagent. The second involved the use of gas chromatography, after direct fluid or tissue distribution of ethchlorvynol in overdose cases, and the data was presented. This indicated that the drug is present in the body in at least three forms: 1) free; 2) as a glucuronide derivative; 3) and as an unknown metabolite. Stability studies indicated that ethchlorvynol is stable in solution for at least one year if refrigerated, relatively stable in putrid tissue at room temperature, and partially stable in formaldehyde solutions at room temperature for periods longer than two months. (Journal abstract modified)

**132370** Forrest, I.S.; Green, D.E.; Wursch, M.S.; Skinner, G.C. Department of Psychiatry, Stanford

University School of Medicine, Stanford, CA 94305 Development of methodology for assay of cannabinoids in body fluids and tissues. (Unpublished paper). Rockville, MD, NIMH, 1972, 5 p.

A progress report on development of methodology for assay of cannabinoids in body fluids and tissues covers is presented. Topics include: urinary and fecal excretion of 3H-metabolites after administration of 3H-delta9-tetrahydrocannabinol (THC) to rhesus and squirrel monkeys; solvent extraction of 3H-delta9-THC metabolites from rhesus monkey urine; dansylation of delta9-THC metabolites from rhesus monkey urine; in vivo metabolism of delta-9-THC; preparation of dansylated delta9-THC as reference compound; passage of 3H-delta9-THC into the fur of rhesus and squirrel monkeys; and an attempt to concentrate the 3H-delta9-THC metabolites in Rhesus monkey urine by controlled thawing of a frozen urine specimen.

**132878** Zitko, B.A.; Howes, J.F.; Razdan, R.K.; Dalzell, B.C.; Dalzell, H.C.; Sheehan, John C.; Pars, H.G.; Dewey, W.L.; Harris, L.S. Sheehan Institute and Sharps Associates, 767-B Concord Ave., Cambridge, MA 02138 Water-soluble derivatives of delta1-tetrahydrocannabinol. Science. 177(4047):442-444, 1972.

Delta1-tetrahydrocannabinol (delta1-THC), which is resinous and insoluble in water and therefore difficult to study pharmacologically, can be converted to a water soluble derivative without loss of its biological activity. This has been achieved by preparing esters bearing a nitrogen moiety with the use of carbodiimide as the condensing agent. In a study of the effects of the water soluble derivative intravenously administered to dogs, its effects and duration of action were similar to molar equivalent doses of delta1-THC. The availability of such water soluble derivatives will allow the evaluation of delta1-THC in self-administration studies in monkeys for its addiction liability potential in man. Applicability of the technique of water solubilization for other compounds of chemical and biological significance is discussed. 14 references. (Author abstract modified)

**133744** Brochmann-Hanssen, Einar. School of Pharmacy, University of California, San Francisco, CA 94122 Opium alkaloids XII: quantitative determination of morphine in opium by isotope

dilution. *Journal of Pharmaceutical Sciences*. 61(7):1118-1121, 1972.

A method based on the isotope dilution technique was developed from the quantitative determination of the morphine content in opium. Morphine-2-3H and morphine-N-24CH<sub>3</sub> are used as radioactive standards. A mixture of opium and the radioactive morphine standard is triturated with dimethyl sulfoxide, dispersed on diatomaceous earth and acidic aluminum oxide, and suspended in water. The aqueous suspension is transferred to a chromatographic column of acidic aluminum oxide, and the alkaloids are eluted with water. Alternatively, the mixture of opium and radioactive morphine is triturated with a little water and dispersed on diatomaceous earth, and the alkaloid bases are liberated with ammonia. The powder mixture is transferred to a column of neutral aluminum oxide and eluted with chloroform-isopropyl alcohol (3:1). Phenolic and nonphenolic alkaloids are separated by extraction at pH 13, and morphine crystallizes from the aqueous phase after adjustment of the pH to 9. The crystals are collected and recrystallized to constant radioactivity. Both extraction methods gave the same results. No loss of tritium occurred during the assay, and morphine-2-H<sub>3</sub> and morphine-N-C<sup>14</sup>H<sub>3</sub> were equally satisfactory as radioactive standards. The method is specific for morphine, has good precision (0.4%), and requires no elaborate technique. 38 references. (Author abstract modified)



## CLINICAL PSYCHOPHARMACOLOGY

### 07 EARLY CLINICAL DRUG TRIALS

**118965** Palmer, H.M. Withington Hospital, Manchester, England **Diazepam sedation for liver biopsy.** Practitioner (London). 208(1247):662-663, 1972.

Sedation and anesthetic uses and effects of diazepam are discussed and compared. The drug has recently been used to induce a state of basal sedation, so that procedures conducted under local anesthesia would be made more acceptable. From a study in which 37 patients were given diazepam before liver biopsy, no side-effects were observed, and 89% had some degree of memory impairment for the event. Provided that standard techniques are strictly adhered to, it can be concluded that the drug is both safe and desirable. The patient is spared the anxiety of an unpleasant procedure, and the degree of sedation produced does not detract from his ability to cooperate. 6 references.

**120727** Ayd, Frank J. 912 W. Lake Ave., Baltimore, MD 21210 **Comparative trial of low dose haloperidol and fluphenazine in office patients.** Diseases of the Nervous System. 33(3):192-195, 1972.

A group of psychotic and neurotic private outpatients was studied to compare the therapeutic efficacy, dose requirements and the side effects of haloperidol with those of fluphenazine, a potent phenothiazine that is often prescribed for nonhospitalized patients. The study demonstrates the efficiency and safety with which haloperidol and fluphenazine can be used in the management of private psychiatric outpatients displaying moderate to severe anxiety, depression and agitation. 11 references.

**121985** Brown, Colin R.; Shroff, Phyllis; Forrest, William H., Jr. Department of Anesthesia, Stanford University School of Medicine, Stanford, CA **Relative potency of trichlorofos compared to pentobarbital as a hypnotic.** Journal of Clinical Pharmacology and New Drugs. 12(8,9):306-312, 1972.

The hypnotic effects of trichlorofos and pentobarbital were compared by a four point bioassay. In a double-blind, randomized complete block design, low and high dosages of both drugs were randomly administered to each of 21 medical

and surgical patients. Hypnotic efficacy was then determined by patients' evaluations of their sleep. For two response variables, 2500mg trichlorofos was equivalent to 100mg pentobarbital, while for another variable, 1700mg trichlorofos was equivalent to 100mg pentobarbital. Compared to pentobarbital, trichlorofos appeared to be a more potent agent when assessed on the basis of quality of sleep rather than on the basis of sleep induction. Trichlorofos appeared to be a safe and effective hypnotic and could be useful particularly when barbiturates are contraindicated. 16 references. (Author abstract)

**121986** Globus, Gordon G.; Phoebus, Eric C.; Fishbein, William; Boyd, Robert; Leventhal, Todd. Department of Psychiatry and Human Behavior, University of California, Irvine, CA, 92664 **The effect of lorazepam on sleep.** Journal of Clinical Pharmacology and New Drugs. 12(8,9):331-336, 1972.

The effect of the benzodiazepine lorazepam on sleep stages, sleep latency, and phasic integrated potentials (PIPs) was investigated. Nine normal subjects, chosen as good sleepers, were studied over eight to nine nights comprising baseline, drug (generally 2mg), and recovery conditions. Major findings indicated a reduction in the rapid eye movement (REM) stage, PIPs, and the waking stage under the drug condition. There was no rebound increase in stage REM either on recovery or the last third of drug nights. In contrast to expectations, stage 4 was not reduced in the drug condition. Studies which use electrophysiologic measures as the sole dependent variables can be interpreted in only a limited way inasmuch as their relevance for waking behavior and mood is unknown. 15 references. (Author abstract)

**122199** Goncalves, N. Psychiatrische Klinik der Universitat, Rheinisches Landeskrankenhaus, Dusseldorf, Germany **Clinical effects of mepiprazol on hospitalized chronic schizophrenics.** Das klinische Wirkungsbild des Tranquilizers Mepiprazol bei hospitalisierten chronischen Schizophrenen. Psychopharmacologia (Berlin). 25(3):281-290, 1972.

In a pilot study, the tranquilizer Mepiprazol was tested using a double-blind crossover design against a placebo. The subjects were hospitalized

schizophrenics who had been treated with neuroleptics for a long time. The study showed that the drug had no deleterious side-effects on important body functions. The double-blind design took into consideration all vegetative and affective disturbances which could be regarded as having occurred as a consequence of the illness, treatment with the neuroleptics, and/or hospitalization. According to the study, Mepiprazol influences all of the considered symptoms. It produced an improvement in symptoms such as disturbance of contact, anxiety, irritability, tension, brooding, and insomnia. However, the drug produced other symptoms such as tiredness and a reduction in activity. 6 references. (Author abstract)

**122296** Hesse, G. 75 Karlsruhe, Hans Thomastr.15a, Germany /N-phenyl-N-benzyl-4-amino-1-methylpiperidin-hydrochloride (Bamipine) combined with 1-cyclohexyl-1-methyl-2-methylamino-ethane (CHP) for the interim and terminal treatment of depressive syndromes./ N-Phenyl-N-benzyl-4-amino-1-methylpiperidin-hydrochlorid (Bamipine) kombiniert mit 1-Cyclohexyl-1-methyl-2-methyl-amino-athan (CHP) als Psychopharmakon zur Intervall- und Terminalbehandlung depressiver Syndrome. *Pharmakopsychiatrie Neuropsychopharmakologie* (Stuttgart). 5(4):219-224, 1972.

The addition of an antihistamine, N-phenyl-N-benzyl-4-amino-1-methylpiperidin-hydrochloride (Bamipine), to antidepressive therapy is described as a most effective treatment for compensated depression. Bamipine has a sedative effect, and in combination with the sympathomimetic action of 1-cyclohexyl-1-methyl-2-methylamino-ethane (CHP), constitutes the Bamipine CHP therapy which has proved immediately effective in a number of cases. Out of 116 cases, 42 responded to treatment the same day, with prompt subjective improvement; 40 responded to treatment to a slightly lesser degree but also on the same day and with subjective improvement, and only five did not respond to treatment. Indications for treatment are the depressions of primary origin (includes schizophrenic type) and contraindications are those with cerebral damage (epilepsy, sclerosis), alcoholism and toxic transition syndromes. The side-effects include: insomnia, loss of appetite, fine tremor, internal restlessness, pre-delirium state, and epileptic seizures. The action of the drug is toward a prompt change of mood (often within the same day), an increase in

instinctive drive and a picture of submanic or euphoric mood. 14 references.

**122306** Haumonte, M.-Th. no address /Clinical testing of a retard neuroleptic: fluphenazine enanthate (Moditen-retard, Squibb Lab.)./ Essai d'utilisation d'un neuroleptique retard: l'oenanthate de fluphenazine (Moditen-retard, Lab.Squibb). *Annales Medico-Psychologiques* (Paris). 130(2):277-283, 1972.

Fluphenazine enanthate, a phenothiazine derivative, has an antipsychotic action and has been prepared in the retard form. Clinical testing was conducted in 33 patients during an 18-month period. Patients included 18 cases of paranoid schizophrenia and schizophrenics of other forms (non paranoid, cyclic, hypochondriacal, chronic), atypical and other psychoses, and mentally retarded characterial and schizoid. The drug (Moditen-retard) was administered i.m. in 2 x 2ml doses of 25mg of fluphenazine enanthate; in some cases the oral Moditen was instituted first before the retard form could be administered regularly. The injections were given every 15 days in most cases; some patients required up to 150 mg of the drug per week. Additional medication was administered when necessary for sedation or insomnia. The local tolerance was excellent; the most frequent general side-effects were extrapyramidal, with tremor, rigidity, salivation, and torsion spasms. These troubles were easily corrected by antiparkinsonism drugs. The drug appeared to have a marked effect on the activity in delirium, and the majority of the patients improved in terms of their contact with their environment.

**122430** Rickels, Karl; Rosenfeld, Howard; Schneider, Benjamin; Silverman, Howard A.; Wagner, Ira G. Department of Psychiatry, Hospital of the University of Pennsylvania, Philadelphia, PA A comparative evaluation of two hypnotic agents in general practice patients with insomnia. *Current Therapeutic Research*. 14(6):293-297, 1972.

Data collected in a 2 week cross-over study of 40 insomniac general practice patients indicate mebutamate to possess better hypnotic properties, as measured in several sleep parameters, than either W-1015 or placebo. Mebutamate dosage was 600 mg and W-1015 dosage was 800 mg. Data were analyzed using McNemar test. Improvement criteria were: quality of sleep, sleep induction, and frequency of awakening. Both active drugs

produced better quality of sleep than placebo. Only mebutamate induced sleep faster than placebo. Both drugs decreased frequency of awakening significantly more than placebo. Mebutamate slightly but significantly improved sleep duration more than W-1015 or placebo. Of 28 patients who executed a drug preference rating after one week, nine preferred W-1015, 16 preferred mebutamate, and three did not differentiate between the three medications. Of 18 patients executing drug preference ratings after second week's study, five preferred W-1015, 12 mebutamate, and one placebo. Twelve mebutamate patients reported 19 incidences of hangover, 14 W-1015 patients 27 incidences, and 10 placebo patients 18 incidences. 6 references.

**130472** Itil, Turan M. Missouri Institute of Psychiatry, University of Missouri School of Medicine, 5400 Arsenal St., St. Louis, MO 63139  
**Quantitative pharmaco-electroencephalography in the discovery of a new group of psychotropic drugs.** *Diseases of the Nervous System.* 33(8):557-559, 1972.

Based on quantitative pharmaco-electroencephalography (EEG), the clinical usefulness and effective dosage ranges of a series of psychotropic drugs (SQ-11290; 12679; U-12041; Abbott 35616; GB-94; GC-46) were predicted. The clinical trials with GB-94 which is a substituted piperazine developed by structural modification of the phenbenzamine molecule, confirmed the EEG prediction: GB-94 was effective in the treatment of depressive symptomatology. The clinical effects and electroencephalographical profiles were very similar to amitriptyline. Experimental pharmacology did not provide any evidence regarding the antidepressive (thymoleptic) properties of GB-94. GB-94 was a powerful antiserotonin and a histamine antagonist on peripheral serotonin and histamine receptors. Even after discovery of the thymoleptic effects, this compound could not be placed in any of the known classes of psychoactive drugs based on the profile of central nervous system actions in animals and on biochemical effects. Quantitative EEG can be a useful method in the early evaluation of psychoactive compounds. 22 references. (Author abstract modified)

**132766** Giudicelli, S. Service des Maladies Nerveuses, Hopital Sainte-Marguerite, Marseilles, France /Opiran, anxiety and psychosis: clinical testing of a new incisive neuroleptic./ Opiran, an-

goisse et psychose: a propos de l'essai therapeutique d'un nouveau neuroleptique incisif. *Annales Medico Psychologiques (Paris).* 1(3):407-413, 1972.

Forty patients with chronic psychoses, acute psychoses, or prepsychoses were treated with opiran, di (para-fluorophenyl) piperidine benzimidazolinone. The dosage levels were 15mg per day, in combination with 50 to 75mg of nozinan, occasionally reduced to 25mg. Subjective impressions of improvement were recorded. Old schizophrenic patients who had previously been treated with other neuroleptics showed seven positive effects, four, medium, and five indifferent effects. Chronic hallucinatory psychoses (four cases) revealed results of two, positive; one, medium; and one indifferent. Results in six cases of frank manias were: five positive and one medium. In eight cases of schizophrenic acute episodes there were four positive; three, medium; and one indifferent. Of the six cases of prepsychotic, four showed positive and two, medium responses. The best responses were obtained in the chronic hallucinatory psychotic states. The drug is recommended for the prepsychotic and hebephrenic states as well.

**132805** Dowzenko, Anatol; Buksowicz, Czeslaw; Kuran, Wlodzimierz. Psychoneurological Institute, Pruszkow by Warsaw, Partyzantow 2/4, Poland /Treatment of Parkinson's disease with Viregyt (amantadine hydrochloride)./ *Leczenie parkinsonizmu Viregytem (Amantadyna).* *Neurologia i Neurochirurgia Polska (Warszawa).* 6(3):426, 432, 1972.

The clinical effect of amantadine hydrochloride, Viregyt, was studied in 36 parkinsonians, 31 adults (16 women and 15 men) and five children. In most of the cases, muscle tone akinesia prevailed over tremor. Viregyt was given to 15 patients and was gradually substituted with the other 21 patients. Doses were increased from 100mg to 600mg daily during a period of 4 weeks to 4 months. The effect of the drug was evaluated according to three factors: neurological tests, temporary activity team tests, and the patient's subjective feeling of well-being. Improvement, observed in 28 patients (78%), included akinesia and muscle tone, and was accompanied by improvement of mimicry, walking, general movement adroitness, and enlivening of patients' proficiency. This effect appeared after 3 to 4 days. In eight patients (five children), no improvement was observed. Side-effects (uneasiness, nausea, and

dizziness) appeared in some of the patients. These were insignificant, and soon disappeared. In three cases a paradoxical reaction appeared (increase of muscle tone, akinesia, and tremor) accompanied by temporary psychic disturbances. The drug is recommended as a new, rather efficient antiparkinsonian remedy. Due to its low toxicity level and reversibility of eventual side-effects, it can be used on an outpatient basis.

**132894** Itil, T.M.; Polvan, N.; Hsu, W. Missouri Institute of Psychiatry, Univ. of Missouri School of Medicine, 5400 Arsenal St., St. Louis, MO **Clinical and EEG effects of GB-94, a 'tetracyclic' antidepressant (EEG model in discovery of a new psychotropic drug).** *Current Therapeutic Research.* 14(7):395-413, 1972.

GB-94, a new psychotropic drug with thymoleptic properties, has been discovered solely on the basis of its EEG profile. GB-94 has none of the pharmacological or neurochemical properties of the existing antidepressive drugs. It seems to be a compound similar to amitriptyline, although its antidepressive effect occurs earlier than that of amitriptyline and decreases somewhat later in the treatment. This study shows the need for screening procedures for psychotropic drugs in addition to those based on the classical animal pharmacology model. The application of quantitative EEG during the chronic administration of drugs in monkeys and during pre-Phase I trials in humans can significantly contribute to the assessment of psychoactive compounds. 25 references. (Author abstract modified)

**132895** Ota, K.Y.; Turek, I.; Kurland, A.A. Spring Grove State Hospital, Maryland Psychiatric Research Center, Catonsville, MD **Clinical trial of amoxapine (CL 67,772) with depressed patients.** *Current Therapeutic Research.* 14(7):381-389, 1972.

An open clinical study of amoxapine (2-chloro-11-(1-piperazinyl)dibenzofuro[2,3-b]pyridine) on a group of nine psychoneurotic depressed patients revealed that the drug was well tolerated within the dosage range of from 50 to 300mg daily. The behavior assessment battery showed considerable reduction of depressive symptoms within the 2-week treatment period. Although any conclusions drawn from this small uncontrolled study must be tentative, amoxapine seems to possess antidepressant properties, with only a mild degree of adverse reactions. 8 references. (Author abstract)

**132903** Bucheit, Joseph. no address /**Mandrax: clinical, pharmacological and toxicological aspects: study of 106 observations.**/ *Le Mandrax: rappels cliniques, pharmacologiques et toxicologiques. Etude personnelle de 106 observations.* Lyons, 1971. 102 p.

Experimental work with methaqualone in animals and humans is described. Its metabolism comprises a rapid absorption, an important fixation in the liver and a concentration in the fatty tissues. A biliary excretion was observed; the elimination is in the conjugated form. The induction of sleep (in the mouse), sedative action, mode of potentiation and side-effects are reviewed. A chronic intoxication was induced in the rat by the oral administration of 40mg/kg of methaqualone five times per week, without undue effects. Sleep induction in humans by Mandrax was similar to that of methaqualone. The EEG changes were comparable to those of barbiturates. The signs of diphenhydramine intoxication are similar to those of Mandrax. Mandrax poisoning was observed in 106 cases (58 of which were hospitalized at the Lyons Poison Control Center). Treatment consists of ridding the body of the poison by gastric lavage and dialysis; there is a risk of the development of acute pulmonary edema or myocardial lesions.

**132951** Kellner, Robert; Freese, Martin L.; Feigelman, Bernard H.; Venn-Watson, Patricia. Department of Psychiatry, School of Medicine, University of New Mexico, Albuquerque, NM **A pilot study of amoxapine (CL 67,772) in depressed inpatients.** *Current Therapeutic Research.* 14(8):449-453, 1972.

Thirteen depressed inpatients were treated with amoxapine in an uncontrolled open label study. Patients with manic-depressive illness showed improvement within a few days. This finding is consistent with the rapid onset of action of this drug. In patients with neurotic depression, the improvement was gradual; no conclusion could be reached as to whether the drug had an antidepressant effect in patients with neurotic depressions. There was no evidence that in the doses administered, amoxapine had tranquilizing or sedative effects. No consistent anticholinergic side-effects were observed. Open label studies with newly admitted, depressed patients can be misleading because of the strong tendency to improvement after admission. Any conclusions from a small pilot study of this kind can only be tentative. 8 references.



**132952** Wiersum, Jeffery. 40 Sunset Ridge, New Paltz, NY 12561 **Clorazepate dipotassium in anxiety: a double-blind trial with diazepam controls.** *Current Therapeutic Research.* 14(8):442-448, 1972.

Clorazepate dipotassium, a new anxiolytic agent, and diazepam were used in treating 50 various psychoneurotic illnesses in a Phase 3 double-blind study. Clorazepate dipotassium was administered to 40 patients with manifest anxiety, while 10 controls received diazepam. A clinically satisfactory overall response occurred in 39 of the 40 patients on clorazepate dipotassium and in all 10 of those on diazepam. Side-effects were not serious and laboratory data and physical findings were not affected with either drug. It is concluded that clorazepate dipotassium is highly effective and safe for use in the management of manifest anxiety. 4 references. (Author abstract modified)

**132953** Saletu, B.; Saletu, M.; Itil, T.M. Missouri Institute of Psychiatry, University of Missouri School of Medicine, St.Louis, MO 63139 **Somatosensory evoked potential: an objective indicator of the therapy efficacy of a new psychotropic drug, clorazepate dipotassium (Tranxene).** *Current Therapeutic Research.* 14(8):428-441, 1972.

The effects of single as well as cumulative doses of placebo, diazepam and clorazepate dipotassium (also known by the code designation Abbott-35616 as well as by the trade name Tranxene) on the somatosensory evoked potential (SEP) were investigated in 10 normal volunteers. The studies took place in the sleep laboratories where electroencephalograms were recorded. Two hours after oral administration of a single dose, placebo did not produce any systematic or significant changes. In contrast, 5mg diazepam induced a latency increase in early peaks as well as a significant decrease in the late peaks of the SEP. The amplitudes were attenuated, reaching the level of statistical significance in the late portion of the response. Comparable doses of 7.5mg clorazepate dipotassium produced SEP changes almost identical to diazepam. When the three drugs were administered three times a day and the SEP was recorded on the following day, cumulative doses of diazepam and clorazepate dipotassium had a long lasting effect on the central nervous system. As in single dose trials, the drug profiles of the two active compounds could be statistically differentiated from that of placebo but not from each other. It was concluded that clorazepate

dipotassium is a centrally effective compound which, based on its SEP profile, can be classified as a minor tranquilizer. The findings add further evidence to the hypothesis that the mode of action of anxiolytic drugs might be explained by their depressive effect on various key areas of the brain, such as the reticular activating system and limbic structures. 39 references. (Author abstract modified)

**132955** Faleni, Ricardo; Cia, Alfredo. Braulio Moyano Memorial Hospital, 2570 Brandsen Street, Buenos Aires, Argentina **Motival in the treatment of anxious depression.** *Current Therapeutic Research.* 14(8):461-469, 1972.

In two separate studies Motival-10 (fluphenazine 0.5mg/nortriptyline 10mg) and Motival-20 (fluphenazine 0.5mg/nortriptyline 20mg) were used to treat patients with symptoms of anxiety and depression. In the first study, Motival-10 was utilized to treat patients with depression and a significant anxiety component. In the second study, Motival-20 was utilized to treat patients with moderately severe depressive symptomatology and less significant anxiety. Both drugs were equally effective in the patient populations treated and produced identical (89%) overall satisfactory clinical response rates. None of the patients from either group had side effects severe enough to require reduction in dose, or interruption or termination of treatment. The incidence of side effects with Motival-20 in primarily depressed patients was greater than the side effects noted with Motival-10. Some of these side effects may have been manifestations of the patient's basic depressive symptomatology and his preoccupation with organic symptoms. Motival-10 should thus be used to treat mild or moderately ill patients with anxiety with or without depression, while Motival-20 should be reserved for those patients with more severe depression that may or may not be complicated by significant anxiety. (Author abstract)

**132956** Freeman, Harry; Mehta, I.S. Research Service, Medfield State Hospital and Medfield Foundation, Harding, MA **A double-blind comparison of the efficacy of EX 10-029 and trihexyphenidyl hydrochloride in relieving drug-induced parkinsonian symptoms.** *Current Therapeutic Research.* 14(8):470-477, 1972.

EX 10-029, a dihydromorphanthridine derivative, and trihexyphenidyl were compared in a

double-blind study to relieve the symptoms of drug induced parkinsonism in chronic schizophrenic patients. The two drugs seemed equally efficacious in daily doses ranging from 30 to 50mg of EX 10-029 and 6 to 10mg of trihexyphenidyl. For neither drug was the intraocular pressure increased even at the maximum dosage. Marked tremors were produced only in the older group of subjects, indicating the necessity for caution in dosage in this age group. A quantifiable measure of tremor, the photomotogram, was the most objective method of assessing improvement. 6 references. (Author abstract modified)

133173 Volmat, R.; Beaudouin, J.-L.; Allers, G.; Vittouris, N.; Dufay, F.; Bizouard, P. Clinique Neurologique et Psychiatrique du Centre Hospitalier Universitaire de Besancon, France /Sedaliu in psychiatry in its capacity as tranquilizer and neuroleptic./ Le sedaliu en psychiatrie dans ses marges tranquilisantes et neuroleptiques. *Encephale* (Paris). 61(2):163-182, 1972.

A study of sedaliu, a combination of methylperidol (a neuroleptic) and hexadiphan (an antispasmodic), is presented in which 47 patients were tested. Of these, 26 were psychotic patients of the chronic type, and 21 were hospitalized for acute syndromes or neurotic states. Two different effects were investigated: the anxiolytic in the second group and the neuroleptic in the first group. The chronic patients were treated in a psychiatric hospital, the acute patients in a general hospital. The anxiolytic treatment with sedaliu consisted of three capsules (each containing 2mg hexadiphan and 5mg methylperidol) per day, which was modified according to the patient's requirements and was in the range of two to eight capsules per day. There was no definite dosage established for the chronic patients but it was generally between three and six capsules per day. The criteria for improvement in the case of anxiolytic action, were: the rapid disappearance of difficulties and an immediate resumption of family and occupational activities, or varying degrees of this criterion. For the neuroleptic action, the effects of sedaliu were compared with the neuroleptic which it had replaced. Sedaliu was found to be effective and well tolerated both as a tranquilizer and as a neuroleptic. The side-effects which are relatively few, are usually associated with the neuroleptic effect and can be corrected by minimal quantities of antiparkinson drugs. 23 references.

133220 Pinard, G.; Prenoveau, Y.; Fliesen, W.; Elie, R.; Biemann, P.; Lamontagne, Y.; Tetreault, L. Unite de Recherche, St-Jean-de-Dieu Hospital, Montreal, Canada Pimozide: a comparative study in the treatment of chronic schizophrenic patients. *Intern.J. of Clinical Pharmacology, Therapy and Toxicology* (Munchen). 6(1):22-27, 1972.

Pimozide, a new psychotropic drug, was compared to trifluoperazine and a placebo in a controlled double-blind study. Eighty chronic schizophrenics were divided into five groups, each group receiving one of the five following drug regimens: pimozide 3mg, once a day; pimozide 6mg, once a day; trifluoperazine 5mg, three times a day; trifluoperazine 15mg once a day; and a placebo. The patients were compared before, during and after a 70-day experimental period by means of psychiatric symptoms and behavior rating scales and an extrapyramidal symptoms rating scale. Pimozide, 6mg once a day, and trifluoperazine, 5mg three times a day, proved to be effective antipsychotic drugs while protecting the patients from dystonia and dyskinesia. 11 references. (Author abstract)

133221 Biemann, P.; Pinard, G.; Tetreault, L. Unite de Recherche, St-Jean-de-Dieu Hospital, Montreal, Canada Flurazepam: study of its hypnotic properties in normal subjects. *Intern.J. of Clinical Pharmacology, Therapy and Toxicology* (Munchen). 6(1):13-17, 1972.

Hypnotic properties of a new benzodiazepine, Dalmane (flurazepam), were evaluated in 104 healthy volunteers who were given 15 or 30mg of Dalmane, 100mg of secobarbital, or placebo. The drug effects on sleep were evaluated by a questionnaire presented on the following mornings. Dalmane, at both doses was significantly superior to placebo with respect to sleep induction as well as duration of sleep. No statistical difference was found between Dalmane and secobarbital in induction or quality of sleep. The 30mg dose of Dalmane and the secobarbital were significantly superior to the 15mg Dalmane dose, in terms of the prolongation of sleep, but were associated with difficulty in awakening. Side-effects were found to be more common with secobarbital. These were: dryness of mouth, headaches, and persistent feelings of heaviness during the day. After Dalmane, some subjects complained of a bitter taste in the mouth. Dalmane (15mg) seems to be a suitable dose in the normal volunteer. 6 references. (Author abstract modified)

**133261** Rapp, W. Umedalens Sjukhus, S-900 10 Umea 10, Sweden Preliminary study of perphenazine enanthate in the treatment of chronic schizophrenia. *Pharmakopsychiatrie Neuropsychopharmakologie* (Stuttgart). 5(4):205-214, 1972.

Perphenazine enanthate was compared to fluphenazine enanthate in 24 patients with a diagnosis of schizophrenia or paranoid syndrome. The depot form of the drugs was used, which is intended for i.m.injection every 14 days, and the drugs were administered under double-blind conditions. Where extrapyramidal side-effects occurred the patients were given antiparkinsonism drugs. A significant difference in favor of perphenazine enanthate was found with respect to: a reduction of disturbance of affective contact; a reduction in affective intensity; and insight into the illness; in all other respects the drugs were comparable. Perphenazine enanthate also showed fewer side-effects than fluphenazine enanthate. 11 references.

**133263** Park, S.; Burdock, E.I.; Gershon, S. Neuropsychopharmacology Research Unit, New York University Medical Center, 550 First Avenue, New York, NY 10016 Importance of adequate dosage determination of drug efficacy: trial of a new butyrophenone compound on acute schizophrenics. *Pharmakopsychiatrie Neuropsychopharmakologie* (Stuttgart). 5(4):191-197, 1972.

The effects of A-30360, a butyrophenone similar to haloperidol in structure, were evaluated in 11 schizophrenic patients with acute symptomatology, in an open design. Patients were tested at baseline and again at termination. The medication was administered at 20mg daily with increments of 20mg twice weekly (during the first part of the study); 10 patients completed from 25 to 30 days of active medication. Maximum dosage ranged from 180 to 540mg daily. There were significant improvements on the Brief Psychiatric Rating Scale, the Nurses' Observation Scale for Inpatient Evaluation and the structured interview. Side-effects appeared at the higher doses, which appeared to be related to the rate of increment rather than to the actual dose given. The frequent side-effect of dyskinesia was controlled with artane or bedadryl. It was discovered early in the study that too low a dose was used for the start, so that the first three patients showed equivocal results. A clearer response was seen in the high dose group. 9 references.

**133315** Rossner, Mahnolf; Ficker, Friedmann. Neurologisch-Psychiatrische Klinik der Medizinischen Akademie 'Carl Gustav Carus', 8019 Dresden, Fetscherstrasse 74, East Germany /Treatment of depressions with Chlorimipramine: literature review and clinical studies./ Die Behandlung der Depression mit Chlorimipramin: Literaturübersicht und eigene klinische Erfahrungen. *Psychiatrie, Neurologie und Medizinische Psychologie* (Leipzig). 24(7):369-383, 1972.

The treatment of depression with 3-chlor-5-(3-dimethylaminopropyl)-10, 11-dihydro-5H-dibenz-(b,f)-azepine-hydrochloride (chlorimipramine) is reviewed and clinical studies are described. Reports of its efficacy include the treatment of retarded, agitated, involutional, and neurotic depressions and depressions associated with schizophrenia. Chlorimipramine was first administered orally or by i.m.injections, but the more severe depressions required i.v.infusions. Orthostatic hypotension has been corrected with dihydroergotamine. Clinical testing was conducted with Anafranil in 48 patients, either as hospital, day clinic or ambulatory patients. Anafranil was administered in a 50mg dose daily in isotonic glucose (occasionally in a 25mg dose) and in three cases was increased to 75mg for a 1 to 2 week period. This was followed (generally) by i.m.injections of 3 x 25mg daily for 1 to 3 weeks, and by oral doses 4 x 25mg daily. Tolerance was good; 15 patients complained of some side-effects (dizziness, dryness of mouth, hypotension) but the medication was withdrawn in only 3 patients. The results were excellent in 20, good in 13, moderate in 3 and unchanged in 9 patients. The most marked effect was in the endogenous retarded depressions. 57 references.

**133462** Falicki, Zdzislaw; Chrzanowski, Wlodzimierz; Makosa, Marek; Pilasiewicz, Barbara; Tolwinski, Tomasz. Akademia Medyczna, Klinika Chorob Psychiczych Bialystok-Choroszcz, Poland /Clinical study of the action of Thioridazine Retard Polfa./ Spostrzezenia Kliniczne nad dzialaniem preparatu Thioridazin -- Retard Polfa. *Psychiatria Polska* (Warszawa). 6(2):137-142, 1972.

Clinical studies of the action of Thioridazine Retard Polfa on 40 schizophrenic patients were conducted. The drug was used in increasing daily doses ranging from 100 to 800 and 1,200mg administered in equal portions every 12 hr. The drug was administered to 21 patients from the beginning of the treatment, 19 patients following Thioridazine Retard treatment of 600 to 800mg.



Considerable improvement of the mental state was obtained in 20% of the cases treated, moderate in 27.5%; 40% were improved only during a stay in the hospital, and 10% did not improve. The mental state was exacerbated in one patient who had refused medication. Patients who had been in the hospital for less than 3 months responded best to treatment. The drug was beneficial in schizophrenic syndromes, particularly paranoid ones, and in patients with a schizophrenic defect, as it had the advantage of counteracting hallucinations, delusions, and anxiety, and of exerting an activating influence. No serious side-effects were noted; the most frequent side-effects were drowsiness and dryness of the mouth. Increase of body weight was noted in four patients. Thioridazine Retard seems to be particularly beneficial in chronic cases calling for continuous medication, as its effect can be achieved with only two applications in 24 hr. 24 references. (Journal abstract)

#### 08 DRUG TRIALS IN SCHIZOPHRENIA

**118934** Alias, A.G. Taunton State Hospital, Taunton, MA Serum transaminases and alkaline phosphatase in schizophrenia. *Biological Psychiatry*. 4(1):89-92, 1972.

The level of serum transaminases and serum alkaline phosphatase in 96 schizophrenic patients aged 17 to 60 was studied. The serum transaminases are sharply elevated in agitated paranoid cases of recent onset. The level of serum alkaline phosphatase tends to be elevated as the disease enters the chronic stage, and steady deterioration sets in. Although it is unlikely that factors unrelated to schizophrenia cause alterations in the enzyme values, it is difficult to give a satisfactory explanation for the mechanism or significance of the observations. Isoenzyme studies of alkaline phosphatase will reveal the source of this enzyme. A detailed study of the liver functions in all types of schizophrenia would be useful, since certain enzymes are found elevated in liver diseases. Statistically significant elevations of serum gamma globulins, characteristic of liver disease, have also been found in chronic schizophrenics. 5 references.

**118986** Park, S; Gershon, S; Floyd, A. Neuropsychopharmacology Research Unit, New York University Medical Center, 550 First Avenue, New York, NY 10016 A clinical trial of

benzazepine (SCH 12679) in acute schizophrenic patients. *Current Therapeutic Research*. 14(6):298-302, 1972.

Ten acute schizophrenic patients were treated with SCH-12679 for three to four weeks with maximum daily dose of 1000-3600mg. Weak antipsychotic activity was demonstrated which may be difficult to separate from a possible placebo effect. 7 references. (Author abstract)

**120084** Schooler, Nina R.; Goldberg, Solomon C. Psychopharmacology Research Branch, NIMH, 5600 Fishers Lane, Rockville, MD 20852 Performance tests in a study of phenothiazines in schizophrenia: caveats and conclusions. *Psychopharmacologia (Berlin)*. 24(1):81-98, 1972.

A battery of performance tests was administered to acutely ill schizophrenic patients prior to treatment and repeatedly during a 26 week course of treatment with one of three phenothiazines (acetophenazine, chlorpromazine or fluphenazine). Included were measures of simple reaction time, cognitive stimulus generalization, sway suggestibility, definition of affectively toned words and subjective uncertainty. Each of these measures were chosen to reflect a specific aspect of schizophrenic deficit or dysfunction. Changes in performance over time and correlations with symptom rating scales of psychopathology presumably tapping the same schizophrenic dysfunctions were examined. Most changes in performance occurred between the initial and first repeated testing. Correlations with clinical ratings were seen primarily in symptoms of withdrawal and cognitive disturbance. (Author abstract)

**120085** Kornetsky, Conan. Division of Psychiatry, Boston Univ. School of Medicine, 80 East Concord St., Boston, MA 02118 The use of a simple test of attention as a measure of drug effects in schizophrenic patients. *Psychopharmacologia (Berlin)*. 24(1):99-106, 1972.

A review of the use of the Continuous Performance Test (CPT), a simple test of attention, in assessing drug effects in schizophrenic patients is presented. Results of experiments are reviewed showing the sensitivity of the procedure to both acute and chronic administration of phenothiazine drugs. In single doses the drug impairs performance while after chronic administration of medication performance improves. Impairment in



performance on the CPT is found in approximately 40-45% of testable patients who show no deficit in performance on a simple cognitive test. In patients with a deficit on the CPT their performance after chronic drug therapy covaries with rating scales of clinical state. Patients who perform poorly on the CPT are more likely to have a history of mental illness in the family than those patients whose performance is indistinguishable from that of normal subjects. 15 references. (Author abstract modified)

**120118** Goldstein, Michael J.; Rodnick, Eliot H.; Jackson, Newton P.; Evans, Jerome R.; Bates, John E.; Judd, Lewis L. Dept. of Psychology, Univ. of California, 405 Hilgard Ave., Los Angeles, CA 90024 The stability and sensitivity of measures of thought, perception and emotional arousal. *Psychopharmacologia* (Berlin). 24(1):107-120, 1972.

Evidence concerning the stability and sensitivity of three classes of performance measures used to determine different aspects of schizophrenic behavior for their stability and sensitivity to drug effects is presented. The measures, stable over a 21 day interval were: 1) word association quality, 2) perceptual coping style, and 3) skin resistance level and reactivity. Acute schizophrenic males were administered these measures 7 and 28 days following admission to a state hospital. Half of the patients were assigned to active phenothiazine medication at seven days and half continued on placebo. Comparison of correlations between 7 and 28 day data for drug and placebo groups revealed different patterns of stability across time and sensitivity to drug ingestion for each of these three classes of measures. (Author abstract modified)

**120120** Payne, R. W. Dept. of Behavioral Science, Pennsylvania Psychiatric Institute, Henry Ave. and Abbottsford Road, Philadelphia, PA 19129 The effects of drugs on objective measures of thought disorder in schizophrenic patients. *Psychopharmacologia* (Berlin). 24(1):147-158, 1972.

Results of studies using tests of thought disorder suggest the possibility of distinguishing three separate and possibly independent syndromes among schizophrenic patients. Process schizophrenics seem to be characterized by a relatively low IQ, general psychomotor retardation, a slow reaction time, perceptual underconstancy,

concreteness and distractibility. No known drug (such as the phenothiazines) has been shown to improve all these dysfunctions significantly in schizophrenic patients. Psychotic anxiety reaction is a label used to describe the thinking disturbances found in many reactive schizophrenics. It consists of a tendency to produce unusual responses in a wide range of experimental situations, accompanied by an unusual degree of perceptual constancy. These behavioral abnormalities might be due to the disruptive effects of a very high level of anxiety, and might be alleviated by depressant drugs. Overinclusive psychosis characterizes a minority of hyperactive schizophrenics and some manic patients, who seem to use unusually broad and vaguely defined concepts in their thinking. 29 references. (Author abstract modified)

**120121** Tecce, Joseph J.; Cole, Jonathan O. Laboratory of Neuropsychology, Boston State Hospital, 591 Morton St., Boston, MA 02124 Psychophysiological responses of schizophrenics to drugs. *Psychopharmacologia* (Berlin). 24(1):159-200, 1972.

Studies of psychophysiological responses of schizophrenics to drugs have involved cardiovascular measures (heart rate, blood pressure, and finger pulse volume), electrical skin activity, digital temperature, pupillary response, muscle activity, and respiration. Drugs included phenothiazines and both sympathetic and parasympathetic agents. Effects of drugs were varied and complex and no simple conclusions are possible. Phenothiazines reduced generally elevated basal levels of psychophysiological activity of schizophrenics (except for heart rate) as well as their reactivity to stimuli. These changes were often accompanied by behavioral improvement, suggesting that schizophrenics can be characterized by excessive levels of arousal which are decreased by phenothiazines to more moderate levels. In contrast, Russian work indicated that the basal levels of schizophrenics are initially low and are generally elevated by drugs, including phenothiazines, with accompanying improvement in psychological functions. These diverse findings were interpreted as showing that the psychological functioning of schizophrenics is a nonmonotonic (inverted-U) function of psychophysiological arousal. A second hypothesis was proposed to account for nonphysiological (cognitive) deficits of schizophrenics, namely,

that performance is a positive, monotonic function of attention. A two process theoretical model involving attention and arousal processes was proposed to account for schizophrenic behavior. Several methodological questions prevented clear interpretation of many drug findings. One particular problem involved possible effects from homeostatic restraint mechanisms (law of initial values or LIV effect). A technique for removal of LIV effects is described. 185 references. (Author abstract)

**120122** Spohn, Herbert E. Menninger Foundation, Box 829, Topeka, KS 66601 A strategy for the study of behavioral mechanisms of antipsychotic drug action in schizophrenia. *Psychopharmacologia* (Berlin). 24(1):201-208, 1972.

A strategy is proposed to study the time course of antipsychotic drug effects upon performance measures in parallel with the time course of drug effects upon the symptoms of schizophrenia, general morbidity and ward behavior. Critical for the productivity of this strategy is the inclusion of performance measures that reflect functioning in psychological processes -- attention, perception etc., in which schizophrenic - specific deficit or deviance has been demonstrated and which may be presumed to mediate symptom formation. Promising candidates for inclusion in a battery of performance measures under these criteria are those reflecting functioning in the information processing sequence, i.e., in sensory - attentional - perceptual - cognitive processes. Given this approach, the examination of relationships between patterns of change at the level of deficit performance and of symptomatology, has the potentiality of disclosing both mechanisms of drug action and critical mediating mechanisms of schizophrenic disorder. 13 references. (Author abstract)

**120263** Pecknold, J. C.; Ananth, J. V.; Ban, T. A.; Lehmann, H. E. Douglas Hospital, 6875 Lasalle Blvd., Verdun 204, Quebec, Canada The use of methyldopa in schizophrenia: a review and comparative study. *American Journal of Psychiatry*. 128(10):1207-1211, 1972.

Since methyldopa has been classified as a central nervous system depressant that produces tranquilization and reversible extrapyramidal symptoms, as well as reducing central amines, it has been suggested that it might have an an-

tippsychotic potential. A study showed a statistically significant deterioration in patients treated with methyldopa as compared with those treated with methotrimeprazine; however, 5 patients showed some improvement on methyldopa. It is suggested that methyldopa's lack of general antipsychotic activity is related to the reduced dopamine concentration in the brain instead of an increased turnover rate, which is characteristic of more effective neuroleptic drugs. 34 references. (Author abstract)

**120632** Onodera, Isao; Okamoto, Yasuo; Ito, Kozo; Ishikane, Masaharu. Sapporo Okamoto Hospital, Japan Clinical evaluation of a new psychotropic drug; Y-4153 -- comparative study with chlorpromazine using a double-blind method. *Clinical Psychiatry* (Tokyo). 14(2):175-183, 1972.

A report on the effects of Y-4153, a new psychotropic drug, on schizophrenia is presented, in comparison with that of chlorpromazine (CPZ). The results show: Y-4153 is more effective than CPZ; CPZ has a tendency to induce aggravation of symptoms; and no side effects were identified. A double-blind study was made of 40 patients, some of whom received Y-4153 at dosages of 60 mg/day for one month while the other group received CPZ at dosages of 150 mg/day for one month. 13 references.

**120698** Goldberg, Solomon C.; Frosch, William A.; Drossman, Ann K.; Schooler, Nina R.; Johnson, Gordon F. S. Psychopharmacology Research Branch, National Institute of Mental Health, 5600 Fishers Ln., Rockville, MD 20852 Prediction of response to phenothiazines in schizophrenia: a crossvalidation study. *Archives of General Psychiatry*. 26(4):367-373, 1972.

An attempt was made to replicate the findings of 2 earlier studies which imply that schizophrenics could be assigned, according to their pattern of presenting symptomatology, to that phenothiazine on which they are likely to improve the most. The results were negative: prediction of better and worse drug assignment could not be made. Factors leading to the failure to predict as compared with successes in earlier work are discussed. The major reason for the failure seems to lie in the restriction of the range of the initial psychopathology. The current state of the art in prediction of response to phenothiazines is equivocal; positive results in the literature preclude dismissal of the idea totally, but are in-

sufficient to establish the relationship as a fact. For the practicing clinician no system is yet available, either from empirical research or accumulated clinical experience, to enable matching of particular schizophrenic patients with particular phenothiazines in terms of their symptom profiles. 17 references. (Author abstract modified)

**120699** Klett, C. James; Caffey, Eugene, Jr. Central NP Research Laboratory, Veterans Administration Hospital, Perry Point, MD 21902 **Evaluating the long-term need for antiparkinson drugs by chronic schizophrenics.** *Archives of General Psychiatry.* 26(4):374-379, 1972.

Chronic schizophrenic males receiving both antipsychotic and antiparkinson medication had the latter replaced by a placebo for a 6 week study period, to estimate the percentage of patients receiving antiparkinson drugs beyond the period of acute symptom management who could have managed without significant return of symptoms. To provide a double-blind control, a smaller group received matching tablets of bztropine mesylate. Of the 403 patients receiving placebos, 7% were withdrawn from the study because of substantial return or reappearance of extrapyramidal symptoms. Another 11% were judged to be worse from the rating data scale, but the remaining 82% seemed to get along quite well without antiparkinson medication, experiencing at most some temporary symptoms of extrapyramidal system disturbance. From these and other data, it is recommended that clinicians reconsider their prescribing habits, particularly prophylactic and long-term use of antiparkinson drugs. 19 references. (Author abstract modified)

**120796** Peck, Richard L. Hospital Physician, Oradell, NJ 07649 **What every doctor should know about drug therapy for psychotics.** *Hospital Physician.* 8(4):32-35, 63, 67-68, 1972.

The views of Dr. N. S. Kline on the use of pharmacotherapy in the treatment of mental illness by nonpsychiatrists are presented. Post-discharge schizophrenics and patients with depressions should be handled by the nonpsychiatrist by using pharmacotherapy. Whenever possible, the psychotic patient should be treated in the community. Basically, three groups of drugs are useful for treatment: the phenothiazines, thiothixene (for schizo affective disorders), butyrophenones (for paranoid patients), and fluphenazine enanthate. For depressed

patients, lithium carbonate is recommended, sometimes combined with other drugs and electroconvulsive therapy. In pharmacotherapy of schizophrenia and depression, one daily dose is recommended. It is argued that psychotherapy may not actually deal with root causes of a disorder, but may be dependent on the patient believing this to be true.

**120824** Itil, Turan M.; Polvan, Necmettin; Uco, Adil; Eper, Ercument; Guven, Fatma; Hsu, William. Department of Psychiatry, University of Missouri School of Medicine at the Missouri Institute of Psychiatry, 5400 Arsenal St., St. Louis, MO **Comparison of the clinical and electroencephalographical effects of Molindone and trifluoperazine in acute schizophrenic patients.** *Behavioral Neuropsychiatry.* 3(9-10):6-13, 1972.

Double-blind clinical and electroencephalogram (EEG) investigations were carried out during Molindone (3-ethyl-6,7-dehydro-2-methyl-5-morpholino-methyl-indole-4-OH-1-hydro chloride) treatment of 30 acute schizophrenics and trifluoperazine treatment of 28 acute schizophrenics. Molindone was found to be effective in controlling the psychotic symptomatology of acute schizophrenics. No major differences between Molindone and trifluoperazine in therapeutic efficacy or development of side effects could be detected. Despite completely different chemical structures, Molindone produces EEG changes similar to those of trifluoperazine. According to its EEG profile, Molindone can be classified as a major neuroleptic drug. It has, particularly in low dosages, a central stimulatory effect which is similar to that of other neuroleptic drugs such as fluphenazine hydrochloride, thiothixene, and haloperidol, and different from that of dextroamphetamine. The euphoric effect of Molindone, which was not observed in these studies, may be related to this stimulatory effect. On the basis of EEG investigations as well as all night sleep studies, it was hypothesized that Molindone exerts its predominant effect on the ascending reticular activating system. As a result of its new chemical structure, Molindone is an important asset for the treatment of schizophrenic patients. 13 references. (Author abstract modified)

**121544** Vereecken, J.L.Th.M.; Tanghe, A. Psychiatric Hospital 'Sancta Maria', Noordwijkerhout, The Netherlands **Fluspirilene and pipothiazine undecylenate, two long-acting injecta-**



**ble neuroleptics: a double-blind controlled trial in residual schizophrenia.** *Psychiatria, Neurologia, Neurochirurgia* (Amsterdam). 75(2):117-127, 1972.

Two long-acting neuroleptic agents used with schizophrenic patients who do not take their tablets regularly are described. The study was undertaken to evaluate the possibility of replacing fluspirilene by pipothiazine undecylenate and to make a double-blind comparison of the two neuroleptics in schizophrenics. Fluspirilene has a duration of action of about one week, while pipothiazine lasts about two. Experimental design patients of group 1 switched from fluspirilene to pipothiazine; patients of group 1 were continued on fluspirilene. Results were assessed for antipsychotic effectiveness, side-effects, occupational therapy, body weight, and safety. Findings from a psychiatric questionnaire showed significant deterioration of patients in group 1 as far as speech, mood, and general information. In group 2, significant amelioration was found. Under pipothiazine more patients showed a lack of facial expressiveness. Discussion indicated that fluspirilene is preferable to pipothiazine, though there are no great changes in psychotic behavior. Side-effects are more frequent and of greater severity in the group using pipothiazine. Results of the study conducted and performed in 26 chronic schizophrenic patients indicate that fluspirilene was the drug of choice for comparative trials of new depot neuroleptics. 23 references.

**121602** Andreas, W. Psychiatrisches Landeskrankenhaus Ziefalten, 7942 Ziefalten, Postfach 40, Germany /Contribution to long-term therapy for schizophrenic psychoses with retard neuroleptics./ *Beitrag zur Langzeittherapie schizophrener Psychosen mit Retard-Neuroleptika.* *Medizinische Welt* (Stuttgart). 23(15):566-567, 1972.

Fluphenazine dihydrochloride was administered to 53 schizophrenic patients in the form of Lyogen retard 3 and Lyogen retard 6. The patients included those with endogenous psychoses within the framework of schizophrenia; patients who had been treated with fluphenazine previously, and chronic cases whose responses could be easily evaluated by the examiner as due to the medication and not to other stimuli. Side-effects were generally insignificant, and no antiparkinson medication was found necessary. Those few patients who did show side-effects reacted with a mild type of hypokinetic syndrome with moderate

restriction of general motor activity, slight facial spasm and detectable stiffness. There was no indication of liver damage. Lyogen retard is applicable to paranoid hallucinatory psychoses, chronic and so-called defect schizophrenias, hebephrenic forms and symptomatic psychoses. The medication lends itself to long-term treatment of chronic schizophrenics and to treatment of acute schizophrenic patients in remission. It is also recommended for patients who are being rehabilitated.

**121902** Andrews, W.N.; King, M.H. London Psychiatric Hospital, London, Ontario, Canada **Amotivational syndrome: the real management problem of schizophrenia.** *Canadian Medical Association Journal* (Toronto). 106(11):1208-1210, 1213, 1972.

Impaired insight is a prominent feature of the schizophrenic syndrome, and failure to take major tranquilizers by the oral route has resulted in many relapses. The introduction of the long-acting phenothiazine fluphenazine enanthate (Moditen Enanthate) has greatly facilitated the control of the florid symptoms of this disorder by transferring most of the responsibility for phenothiazine administration from the patients to the clinic or family physician. The educational maturing process, to enable these patients to cope with the challenges of adult life and the reality of their condition, can be handled more effectively through a therapeutic team approach, operating within the framework of a structured program, than by the traditional psychiatrist - patient relationship alone. 10 references. (Author abstract)

**121984** Ritter, Robert M.; Tatum, Patricia Ann. University of Mississippi, School of Medicine, Department of Psychiatry, Whitfield, MS **Two studies of the effects of mesoridazine.** *Journal of Clinical Pharmacology and New Drugs.* 12(8,9):349-355, 1972.

Experience with mesoridazine administered orally to 60 patients in a controlled and 97 patients in an open study indicates that the drug is an effective treatment for schizophrenia. Twelve of the 16 items of the Brief Psychiatric Rating Scale (BPRS) reflected significantly greater improvement for patients treated with mesoridazine than for those treated with placebo. According to ratings made with the BPRS, mesoridazine patients showed improvement in paranoid ideation and psychomotor disturbances. The factor indica-



tive of thought disorder was particularly improved, as were the symptoms comprising this factor. The quality and quantity of improvement in the area of thought disorders suggests that mesoridazine may be particularly effective against this core aspect of schizophrenia. Factor scores of the Nurses' Observation Scale for Inpatient Evaluation (NOSIE-30) used in the controlled study show that mesoridazine patients had an increase in their total assets after treatment. The NOSIE-30 results reflected the fact that patients administered mesoridazine became less psychotic and irritable, also neater and more socially competent. Results obtained in the open study, where only the BPRS was used, parallel those from the controlled study in supporting the effectiveness and safety of mesoridazine. Patients taking mesoridazine experienced some side effects of mild to moderate severity in both studies. Results of laboratory tests and electrocardiograms indicate that mesoridazine does not adversely affect blood, liver, kidney, or heart function. 11 references. (Author abstract)

**122209** Serafetinides, E.A.; Collins, S.; Clark, M.L. Department of Psychiatry, University of California at Los Angeles, Center for the Health Sciences, Los Angeles, CA **Haloperidol, clopenthixol, and chlorpromazine in chronic schizophrenia: chemically unrelated antipsychotics as therapeutic alternatives.** *Journal of Nervous and Mental Disease.* 154(1):31-42, 1972.

In a double-blind placebo controlled clinical trial in 57 chronic schizophrenic patients, haloperidol (HAL) and clopenthixol (CX) were found to be effective antipsychotic agents, favorably altering behavior as observed by the psychiatrist, the nurse, and ward attendants. In this respect they appeared to compare adequately to the standard drug, chlorpromazine. In this experiment, neither the standard drug nor the investigational drugs affected psychological test performance. The expected side-effects such as extrapyramidal signs and sedation did occur and in some instances required dose reduction for alleviation. One case of possible hepatotoxicity in the CX group occurred at the end of the study and was considered of serious import requiring cessation of medication. It was concluded that these chemically unrelated antipsychotics could be used in practice as therapeutic alternatives, the particular choice depending on side-effects and possibly symptomatology. 17 references. (Author abstract modified)

**122662** Prien, Robert F.; Caffey, Eugene M., Jr.; Klett, C.James. Central Neuropsychiatric Research Laboratory, Veterans Administration Hospital, Perry Point, MD 21902 **A comparison of lithium carbonate and chlorpromazine in the treatment of excited schizo-affectives.** *Archives of General Psychiatry.* 27(2):182-189, 1972.

In an 18 hospital collaborative study, 83 newly admitted patients with a diagnosis of schizoaffective psychosis, excited state, were randomly assigned to lithium carbonate or chlorpromazine hydrochloride for a three week period. Patients were classified as highly active or mildly active on the basis of degree of hyperactivity shown at admission. The results showed that lithium carbonate was less effective than chlorpromazine in treating highly active patients. This was due primarily to lithium carbonate's relatively poor control of hostile, excited behavior. There was no major difference between lithium carbonate and chlorpromazine among mildly active patients; both treatments showed a significant reduction in affective and schizophrenic behavior. The possibility that lithium carbonate may have neuroleptic properties is considered in a discussion of the therapeutic and diagnostic implications of these results. 39 references. (Author abstract)

**122885** Freeman, Hugh. Hope Hospital, Salford, England **Controlled trial of penfluridol in acute psychosis.** *British Medical Journal (London).* 1(5797):442, 1972.

In a letter to the editor a previously published claim that oral medication has the advantage of being more manageable for treating schizophrenics is disputed. Injection leaves no doubt as to whether a patient has received the medication or not. Use of fluphenazine decanoate injections is discussed, as well as use of oral penfluridol. 3 references.

**126227** Clark, Mervin L.; Ramsey, H.Rudy; Rahhal, Don K.; Serafetinides, Eustace A.; Wood, Freda D.; Costiloe, J.Paul. University of Oklahoma Health Sciences Center, 800 NE 13th St., Oklahoma City, OK 73104 **Chlorpromazine in chronic schizophrenia: the effect of age and hospitalization on behavioral dose-response relationships.** *Archives of General Psychiatry.* 27(4):479-482, 1972.

Behavioral data from a previous study of chronic schizophrenic patients were stratified by age and duration of hospitalization and examined

for dose response relationships at the 12th week of treatment with either placebo of 150, 300 or 600mg chlorpromazine per day. The shorter hospitalized patients (under 10 years) and to a lesser extent, the young patients (under 40-years-old) responded better to the highest dose. The longer hospitalized patients (over 10 years) and patients over 40 years old achieved no improvement in response beyond 300mg/day. 6 references. (Author abstract modified)

126228 Evans, Jerome R.; Rodnick, Eliot H.; Goldstein, Michael J.; Judd, Lewis L. Dept. of Psychology, University of California, Los Angeles, CA 90024 Premorbid adjustment, phenothiazine treatment, and remission in acute schizophrenics. *Archives of General Psychiatry*. 27(4):486-490, 1972.

In a double-blind design, length of hospital stay, changes in psychiatric symptoms, ward behavior, and posthospitalization treatment recommendations were examined as a function of good or poor premorbid status and medication or placebo treatment in a sample of men with acute schizophrenia. There were few initial differences in psychiatric symptoms or in ward functioning between the premorbid groups. Nevertheless, the good premorbid patients showed more rapid remission of symptoms and, hence, earlier discharge. Of the patients who were discharged early, more of the good premorbid patients fell in the placebo group in sharp contrast to the discharged poor premorbid patients, who were predominantly in the medication group. This trend toward more rapid improvement among patients with a good premorbid history in the absence of phenothiazines was supported by data indicating they required less posthospitalization medication. 14 references. (Author abstract)

127854 Martorano, Joseph T. Psychopharmacology, The Roosevelt Hospital, New York, NY Target symptoms in lithium carbonate therapy. *Comprehensive Psychiatry*. 13(6):533-537, 1972.

The successful treatment with lithium carbonate of two patients originally diagnosed as schizophrenic (paranoid subtype) and previously treated with electroshock treatment is described. The implications of treatment as related to diagnosis are discussed in a detailed retrospective analysis of the cases. It would seem that target symptoms have increasing importance with the dramatic development of neuropsychophar-

macology. Two possible target symptoms, affective rage and hyperactivity, are discussed in their apparent relationship to the therapeutic efficacy of lithium carbonate in episodic forms of psychoses. Further differentiation of these symptom complexes is presented in terms of establishing more sophisticated criteria for the appropriate use of psychopharmacologic modalities in the future. 12 references. (Author abstract)

127856 Chacon, Carlos; Harper, P.; Harvey, G. F. New Cross Hospital, Wolverhampton, England Work study in the assessment of the effects of phenothiazines in schizophrenia. *Comprehensive Psychiatry*. 13(6):549-554, 1972.

Simple techniques for the assessment of work performance and an assessment of the effects of phenothiazines in chronic schizophrenics including validation by work study experts are reported. The value of these techniques was tested in a double-blind, controlled crossover trial comparing the effects of chlorpromazine, fluphenazine decanoate and placebo. Results show a significant increment of performance on a complex task when the patients were receiving fluphenazine decanoate. The relevance of these techniques to industrial therapy assessment, rehabilitation and the community management of chronic schizophrenics is discussed. 20 references. (Author abstract)

128347 Doust, John W. Lovett; Huszka, Louis. Clarke Institute of Psychiatry, 250 College Street, Toronto 2B, Ontario, Canada Amines and aphrodisiacs in chronic schizophrenia. *Journal of Nervous and Mental Disease*. 155(4):261-264, 1972.

Administration of a combination of 1-tryptophan, a monoamine oxidase inhibiting agent, and a psychotropic drug with antiserotonin as well as adrenalytic effects provoked compulsive sexual excitatory behavior in certain female patients suffering from chronic schizophrenia. This aphrodisiac effect was found to exist only with the full combination of drugs employed. It did not occur where the psychotropic drugs were not used. Significant changes in the affected patients were found for indoleamine excretion patterns and in free epinephrine but not in norepinephrine or in urinary and plasma steroids. 17 references. (Journal abstract)

128349 Singh, Man Mohan; Di Scipio, William J. Clinical Psychopharmacology Unit, Bronx State

Hospital, 1500 Waters Place, Bronx, NY 10461  
**Changes in staff anxiety and attitudes during a double blind study of haloperidol in acute schizophrenics within a structured milieu.** *Journal of Nervous and Mental Disease.* 155(4):245-256, 1972.

The changes in staff anxiety and attitudes and their relationship to changes in drug treated schizophrenics were longitudinally investigated during a double-blind study of haloperidol within a structured, reality oriented ward setting. A specially designed self-administered ward staff questionnaire was used periodically to monitor staff anxiety and attitudes. It proved sensitive in discriminating between the anxiety prone and stable staff and also in measuring changes in staff anxiety and attitudes over time. It was validated against the Eysenck Personality Inventory (EPI). There were significant changes in staff anxiety and attitude scores along the course of the study. Almost all of these changes were contributed by the staff who received high neuroticism scores on the EPI. They reacted with much anxiety to pressures within the therapeutic situation and were probably a major factor in generating ward crises which led to serious disruption of the structured therapeutic program. The patient behavior was a major determinant of staff anxiety and attitudes. This was best seen during a ward crisis associated with benztropine induced nontherapeutic changes in patients. In the benztropine free weeks of the test, the patient behavior improved while the increased anxiety and conflict among staff persisted, thus indicating that reduction in patient disturbance was not related to the resolution of staff tension. Rather it seemed that the increase in staff anxiety and negative attitudes was primarily triggered by benztropine induced nontherapeutic changes in patients and then probably was maintained by the ensuing conflicts. 19 references. (Journal abstract modified)

**128408** Karon, Bertram P.; Vamdenbos, Gary R. Michigan State University, East Lansing MI 48823 **The consequences of psychotherapy for schizophrenic patients.** *Psychotherapy: Theory, Research and Practice.* 9(2):111-119, 1972.

Thirty six schizophrenic patients were randomly assigned to three treatment groups in a comparative investigation of psychotherapy alone, psychotherapy with medication, and medication alone. The medications given were phenothiazines. All patients were examined before

treatment began and after 6, 12, and 20 months (end of treatment) by outside evaluators using a battery of tests and interviews. It was shown that psychotherapy produces significantly greater patient change than medication and is particularly effective in changing the thought disorder. It is also necessary for the therapist to be experienced, benign, and to believe in the treatment he is administering. Medication is a short-term benefit when compared to no treatment at all. These findings are concordant with the experiences of many psychotherapists but are strikingly incongruent with much of the research literature. 25 references.

**128952** Fujita, Shinzo; Hirai, Hiroshi; Osaki, Michiyo; Irino, Keiko; Mizutani, Takafumi; Sasaki, Makoto; Komatsubara, Kazuo. Yagoto Mental Hospital, Japan **On the administration of psychotropic drugs and its side effects detected by liver function test.** *Clinical Psychiatry (Tokyo).* 14(7):53-62, 1972.

A report on the side effects of psychotropic drugs is presented, based on a liver function test given to 234 male and 171 female hospitalized patients with schizophrenia, atypical psychosis, manic-depressive psychosis, psychasthenia, epilepsy and senile psychosis who had been treated with psychotropic drugs for 1 to 12 years continuously. Also tested were 52 patients who had been treated with psychotropic drugs once a week for 2 months. The results show: 80% of the 52 patients who were treated for 2 months and 60% of the patients who have been treated for 1 to 12 years show abnormality in liver function, while the rate of abnormal liver function of normal persons is 25%; abnormality in those patients who were treated for 2 months disappears within 2 to 3 months after termination of psychotropic drug treatment. No significant relationship was found between the period of time of administration and the amount of dose and increase in the rate of glutamic oxaloacetic transaminase, glutamic pyruvic transaminase, lactic dehydrogenase, or alkali phosphatase nor was any significant difference found between the average rate in the normal rate of the patients who have been treated for from 1 to 12 years and those of normal healthy persons. The results indicate that sensitivity toward psychotropic drugs differs depending upon the individual, and that further research is necessary on the method of treatment for those who have a high sensitivity to such drugs. 30 references.



**129838** Rappaport, Maurice; Hopkins, Kenneth; Hall, Karyl. Agnews State Hospital, Dept. of Mental Hygiene, San Jose, CA 95114 Auditory signal detection in paranoid and nonparanoid schizophrenics. 27(6):747-752, 1972. Archives of General Psychiatry.

Differences in auditory signal detection between paranoid and nonparanoid schizophrenics were examined on and off phenothiazine medication. Compared to normals: 1) paranoids detected signals less accurately and used more conservative decision making criteria; 2) nonparanoids detected signals less accurately under easy signal to noise (S/N) conditions but as well as normals under difficult conditions, they were neither more nor less conservative in the criteria they adopted; and 3) paranoid and nonparanoid subjects had a constant number of commission errors under all S/N conditions, while normals showed an increase with each decrease in S/N ratio. No significant overall effect of phenothiazine medication on the signal detection performance of schizophrenics was found. A significant interaction between dosage level and diagnosis was found. The signal detection measure does not appear to be a direct measure of sensory sensitivity in schizophrenics. 25 references. (Author abstract)

**130474** Bankier, R. G.; Mathewson, F. A. L. University of Manitoba, Selkirk Manitoba, Canada A clinical study of mesoridazine and chlorpromazine in relapsed schizophrenic patients. Diseases of the Nervous System. 33(8):529-534, 1972.

Fifty seven chronic schizophrenic patients who were allowed to relapse to florid psychosis following withdrawal of medication were treated as three groups with mesoridazine, chlorpromazine generic and chlorpromazine proprietary. Clinical and laboratory observations were noted both during the withdrawal period and during the period of drug treatment. Mesoridazine is probably a more potent antipsychotic drug than chlorpromazine but shows a higher incidence of ECG changes affecting mainly the T wave and/or Q-T interval. However, there is no evidence to suggest that this is a cardiotoxic effect. Mesoridazine did not depress granulocytes or the white blood cell count. All groups of patients showed an improvement over the prestudy level of function and on a much smaller daily dose of medication than had previously been used. 17 references. (Author abstract modified)

**130669** Simpson, G. M.; Arengo, A. D.; Angus, J. W. S.; Beckles, E. D.; Rochlin, D. Early Clinical Drug Evaluation Unit, Rockland State Hospital, Orangeburg, NY A one-year trial of clopenthixol in chronic schizophrenia. Canadian Psychiatric Association Journal (Ottawa). 17(4):321-323, 1972.

In order to test the safety and therapeutic efficiency of clopenthixol, 56 patients with chronic schizophrenia were maintained on that drug for one year. Significant improvement was noted in 13 of the 18 Brief Psychiatric Rating Scale (BPRS) items by the end of the study. There was also clinical improvement in approximately 71% of the sample, with 27% showing no change and 2% slightly worse in comparison with their premedication condition. A number of side effects and abnormal laboratory results was noted during the first few months of the study, although these generally dropped to normal levels as the study continued. It would appear that clopenthixol is an active antipsychotic medication which maintains its activity over 12 months. A few patients responded very well to this medication after having failed to react to other neuroleptics. 9 references. (Author abstract)

**131571** Ananth, J. V.; Ban, T. A.; Lehmann, H. E. Douglas Hospital, 6875 Lasalle Boulevard, Verdun, Quebec, Canada Conditioned reflex analysis of chronic schizophrenias. Canadian Psychiatric Association Journal (Ottawa). 17(5):377-389, 1972.

The results of a psychophysiological (conditioning) analysis of 60 chronic schizophrenics are presented. A relationship between the level of psychophysiological performance and differential drug withdrawal effects, based upon the use of phenothiazines and the Verdun (Quebec) Conditioning Program, is revealed. Regression from a higher to a lower level of organization, for example, from integrational to skeletomuscular or from skeletomuscular to autonomic functional systems, and dissociation within a functional system or between the different functional systems tested, were shown to be prevalent in schizophrenic patients. It appears that in various schizophrenic patients there may be a differential disturbance of functioning in the brain, inasmuch as an equilibrium was not found to be maintained between excitatory and inhibitory processes in the brain. 20 references. (Author abstract modified)



**131963** Hogarty, Gerard E.; Goldberg, Solomon C.; Collaborative Study Group. 102 Bloomsbury Ave., Baltimore, MD 21228 **Drug and sociotherapy in the aftercare of schizophrenic patients: one-year relapse rates.** *Archives of General Psychiatry.* 28(1):54-64, 1973.

A report of the posthospital treatment of 374 schizophrenics for two years is presented. Relapse rates for the first year were recorded. At clinic intake, patients were randomly assigned to major role therapy (MRT involves social casework and vocational rehabilitation counseling) and stabilized through the administration of chlorpromazine. After two months, further assignment to drug (chlorpromazine) or placebo was made. Four groups were studied in each of three after-care clinics: placebo alone; placebo and MRT; drug alone; drug and MRT. Relapse in the placebo group is twice that of the drug group, but one half of all relapsers (drug and placebo) cease medication prior to relapse. The prophylactic action of the drug is established for many remitted schizophrenics. The MRT also lowers relapse rate significantly, but only after six months. Drug and sociotherapy effects are additive rather interactive by 12 months. Results replicate across all clinics. 46 references. (Author abstract modified)

**132718** St-Laurent, J.; Carle, R.; Domingue, D. Department of Psychiatry, Universite de Sherbrooke, Sherbrooke, Canada **Fluspirilene in the treatment of chronic schizophrenic outpatients.** *Current Therapeutic Research.* 14(9):599-608, 1972.

Based upon the Brief Psychiatric Rating Scale, a statistically significant reduction in specific symptomatology (Student's 't' Test) in chronic schizophrenic outpatients occurred with fluspirilene, and the improvement reached the accepted level of significance by the end of the third week of therapy. The psychopathological symptoms improved in the areas of motor retardation, withdrawal, blunted affect, and thinking, both in the form (conceptual disorganization) and content as well as in the perceptual area (hallucinations). To a lesser extent, a significant degree of decrease in anxiety was observed by the seventh week. Suspiciousness, hostility, and uncooperativeness decreased significantly but not until the eleventh week. Among the adverse effects, extrapyramidal symptoms (akathisia, tremors, dysarthria, dyskinesia, and oculogyric crises) occurred in 75% of the patients. However, the remaining patients (six) did not report any ex-

trapyramidal (or other) side-effects despite the fact that doses of 20mg were given to five and 12mg to the sixth. Gastrointestinal symptoms were not frequent, but insomnia was noted in 16% of the patients, transient fatigue and apathy in 33%, and drowsiness in close to 25%. It is concluded that fluspirilene is a worthwhile medication in the treatment of chronic schizophrenic outpatients. However, there should first be a gradual reduction of the previous medication; second, until the effective dosage has been determined, the patient should be seen regularly by the physician; and third, a nurse should be involved in a constant followup of these patients. 6 references. (Author abstract modified)

**132896** Kiev, Ari; Guclu, Baki; Kulkarni, A.S. Cornell University Medical College, New York Hospital Medical Center, New York, NY **Evaluation of piperacetazine (Quide) injection in acute schizophrenics.** *Current Therapeutic Research.* 14(7):376-380, 1972.

An injectable form of piperacetazine, a phenothiazine tranquilizer, and injectable chlorpromazine were evaluated for their safety and efficacy in a group of 26 unmanageable and uncooperative acute schizophrenic patients. They were randomly assigned to one of the treatments. Administration of the drugs and evaluation of the patients were done on a double-blind basis. Clinical evaluations were done using the Brief Psychiatric Rating Scale, Clinical Global Rating Impressions, and a Target Symptom Rating Scale. Piperacetazine (Quide) was found to be as effective as chlorpromazine in the immediate control of acute schizophrenic patients, as shown by the overall manageability and by the statistically significant improvement in the clinical evaluation of these patients. 6 references. (Author abstract)

**132977** Wyatt, Richard J.; Vaughan, Thomas; Galanter, Marc; Kaplan, Jonathan; Green, Richard. Lab. of Clinical Psychopharmacology, Div. of Special Mental Health Research, NIMH, Saint Elizabeths Hospital, Washington, DC 20034 **Behavioral changes of chronic schizophrenic patients given L-5-hydroxytryptophan.** *Science.* 177(4054):1124-1126, 1972.

Oral administration of the serotonin precursor L-5-hydroxytryptophan with a peripheral decarboxylase inhibitor produced mild to moderate improvement in six of seven chronic undifferentiated schizophrenic patients who were re-

sistant to phenothiazine treatment, as compared to an oral administration of a placebo. Two of four chronic paranoid schizophrenic patients who were resistant to phenothiazine treatment became worse with 5-hydroxytryptophan; one improved. It is presumed that these psychological changes were directly or indirectly produced from increases in brain serotonin. Indirect data from animals and humans indicate that there may be an abnormality in serotonin metabolism in some schizophrenics. 11 references. (Author abstract)

133351 Angst, J.; Frei, M.; Beck, M.; Jaenicke, U.; Muller, W.; Padrutt, A.; Scharfetter, Chr.; Vetter, P.; Zulauf, S. Psychiatrische Universitätsklinik CH-8029 Zurich, Switzerland /Comparison of perphenazine (Trilafon tablets) with perphenazine-oenanthat (Trilafon depot injection) in a double-blind trial./ Vergleich von Perphenazin (Trilafon-Tabletten) und Perphenazin-Oenanthat (Trilafon-Depot-Injektionen) im Doppelblindversuch. *Pharmakopsychiatrie Neuropsychopharmakologie* (Stuttgart). 5(3):169-176, 1972.

The effect of oral administration of perphenazine is compared with that of i.m.injection (as depot) of perphenazine enanthate, in a double-blind study of 40 newly admitted psychotic schizophrenics. The oral dosage was 24mg daily, and parenteral dosage 100mg every second week. The psychopathological assessment was by the AMP system at intervals from day 0 to day 40. With both forms of administration, a very good antipsychotic effect was obtained; this effect, produced by 100mg perphenazine enanthate, lasts about 10 days. The symptoms in which improvement was seen were: incoherence, confusion, paralogia, feelings of being influenced by others, and other delusional phenomena. There was no effect on the depressive syndrome. Definite somatic side-effects were observed with more frequency in the parenteral treatment. The parenteral administration has significant advantages over the oral with respect to the clinical, social, and ambulatory treatment of schizophrenic patients. 13 references. (Journal abstract modified)

133355 Van Lommel, R.; Dom, R.; Baro, F. Psychiatric Department, Leuven University, B-3043 Bierbeek, Belgium Interaction between neuroleptic therapy and sociotherapeutic approach: an investigation with penfluridol and haloperidol.

*Pharmakopsychiatrie Neuropsychopharmakologie* (Stuttgart). 5(2):94-104, 1972.

Penfluridol and haloperidol were tested with the sociotherapeutic approach and traditional hospital care; each experimental condition (using one of the drugs and one of the milieus) was applied to 30 chronic schizophrenic patients. The 120 patients were 22 to 62 years old, had been hospitalized for 2 to 28 years, and were characterized by submissiveness, apathy, loss of individuality and loss of interest. Active adaptation was evaluated in terms of social adjustment, intellectual performance, vigilance, target symptoms, and work adaptation. The sociotherapeutic program was enhanced by movement therapy, group discussions, variation of the industrial work therapies, and active involvement in social situations; the hospital care patients were exposed only to the traditional occupational therapy. The results showed that patients treated with penfluridol in a sociotherapeutic setting show more active adaptation than patients treated with haloperidol in this setting. Patients with either drug showed a more active adaptation in a sociotherapeutic setting than in a traditional hospital setting. Haloperidol appeared to be superior in both hospital settings when more abstract intelligence tasks were required. 29 references. (Journal abstract modified)

134197 Gallant, D. M.; Bishop, M. P.; Guerrero-Figueroa, R. Tulane University School of Medicine, New Orleans, LA GP-45795: a controlled evaluation in chronic schizophrenic patients. *Current Therapeutic Research*. 14(4):215-219, 1972.

The effects of GP-45795, a tricyclic dibenzothiepin compounds, were evaluated in a controlled double-blind comparison against trifluoperazine in the treatment of chronic schizophrenic patients. Twenty four male and female patients were divided on a random basis into two medication groups of 12 each. The study extended through two weeks of baseline examinations and eight weeks of medication. A 5:1 GP-45795 to trifluoperazine dosage ratio was used, with medication gradually increased from starting daily dosages of 50mg GP-45795 or 10mg trifluoperazine to planned maximal daily dosages of 500mg of GP-45795 and 100mg of trifluoperazine. Only three trifluoperazine patients reached maximal dosage of 100mg daily and no GP-45795 subjects reached 500mg daily. Findings

indicated that GP-45795 is a highly active antipsychotic compound for the chronic schizophrenic patient. No serious side-effects were observed, and GP-45795 showed notable trends towards superiority over trifluoperazine on all of the efficacy measures employed. It appears that GP-45795 is at least comparable in efficacy to trifluoperazine. Further studies can determine whether it may have some genuine advantages over prototype compounds and perhaps can delineate specific patient types or target symptoms for which this drug may have special application. 3 references. (Author abstract modified)

**134204** Rosen, Bernard; Engelhardt, David M.; Freedman, Norbert; Margolis, Reuben; Rudorfer, Leon; Paley, Herbert M. Hillside Hospital, 75-59 263rd Street, Glen Oaks, NY 11004 **Prediction of psychiatric hospitalization: II. the Hospitalization Proneness Scale: a cross-validation.** *Journal of Abnormal Psychology*. 80(3):271-274, 1972.

The relationship between the predictability of the Hospitalization Proneness Scale (HPS) and the incidence of hospitalization in two successive clinical samples of 446 and 149 schizophrenic outpatients was examined. Patients had been randomly assigned to either placebo, chlorpromazine, or promazine and treated under double blind conditions. The HPS predicted hospitalization for placebo and chlorpromazine treated groups, however, the relationship was not significant. The correlations for the placebo and chlorpromazine treated groups, which were statistically similar, were each significantly greater than the promazine correlation. This finding was consistent for both clinic samples. The results emphasize the validity of the HPS as well as the importance of accounting for patient characteristics in evaluating the differential activity of antipsychotic agents. 6 references. (Journal abstract modified)

**134309** Tanghe, A.; Vereecken, J. L. Th. M. Psychiatric Unit, Psychiatric Hospital 'Sancta Maria', Langeveldestraat 1, Noordwijkwehout, The Netherlands **Fluspirilene, an injectable, and penfluridol, an oral long-lasting, neuroleptic.** *Acta Psychiatrica Scandinavica* (Copenhagen). 48(4):315-331, 1972.

Forty hospitalized female schizophrenic patients were included in a double-blind trial of fluspirilene and penfluridol. All patients had been receiving fluspirilene, and at the start of the study half of them were switched abruptly to penflu-

ridol while the other half continued on fluspirilene. Both drugs were given weekly in individually adjusted dosages over a period of 15 weeks. Assessments of antipsychotic effects, side-effects and occupational therapy evaluations were made at regular time intervals. All patients completed the trial. The mean optimal weekly dose was 7.87mg for fluspirilene and 83mg for penfluridol. Fluspirilene treated patients maintained the previous degree of improvement with a significant amelioration of mental distortion and muscular restlessness. Penfluridol treated patients showed significant improvement in the areas of affective impoverishment, hallucinations, facial expression and muscular rigidity. All significant intergroup differences in this study were in favor of penfluridol. The increase in spontaneity, creativity and improvement of affect achieved with fluspirilene was maintained in the penfluridol treated patients. Extrapyramidal symptoms occurring in some patients in either group were effectively controlled by concomitant administration of dextimide. The prolonged action of penfluridol on oral administration offers new perspectives in the maintenance therapy of reliable chronic schizophrenics. 29 references. (Author abstract modified)

**134850** Pishkin, Vladimir. Univ. of Oklahoma Health Sciences Center, Norman, OK 73069 **Effects of two antidepressants upon concept learning: psychophysiological parameters in depressed humans.** *Psychonomic Science*. 29(4B):269-270, 1972.

In a paper presented at the thirteenth annual meeting of the Psychonomic Society, the effects are discussed of two antidepressants upon concept learning. There is considerable evidence of improvement in psychotic and psychoneurotic states of depression after treatment with either Imipramine or Nialamide. Depressed male chronic schizophrenics (N = 72) participated in a double-blind placebo controlled study of Imipramine and Nialamide. The Ss performed on concept identification (CI) tasks varying in complexity: concomitant measures of electrodermal activity were obtained. Major findings were: 1) both antidepressants facilitated CI performance; 2) there was a negative relationship between CI errors and spontaneous galvanic skin responses (GSRs); 3) the placebo Ss produced the least and the Nialamide Ss the most GSRs; and 4) CI errors increased monotonically with increasing problems complexity in the antidepressant groups, but not in the placebo conditions. (Author abstract)



09 DRUG TRIALS IN AFFECTIVE  
DISORDERS

118987 Chen, Calvin H.; Hernandez, Hugo R.; Riaz, Abdul G. Northville State Hospital, Northville, MI 48167 The use of AL-1612 on anxious neurotic outpatients; a preliminary study. *Current Therapeutic Research*. 14(6):303-306, 1972.

Twenty neurotic patients showing anxiety and/or tension selected from the outpatient department were given AL-1612 from 15-40mg/day for four weeks. Fourteen patients (70%) showed definite improvement, one remained unchanged and five became worse. Among those who benefited, two patients showed dramatic improvement especially in view of the fact that they had failed previously to respond to several other medications and other modalities of treatment. Six out of the 20 patients (30%) complained of minor side effects which disappeared spontaneously or were readily controlled after a reduction of the dosage except a single patient who developed muscular rigidity. The standard battery of laboratory tests showed no abnormalities. Therefore, it is the opinion of the authors that AL-1612 appeared to have beneficial effects on neurotic outpatients showing mainly anxiety and/or tension. Its side-effects were relatively few and mild while toxic effects were nil. Further studies with the double-blind method seem warranted. 1 reference. (Author abstract)

119045 Evans, Richard, III. Author address not given Lithium therapy for manic-depressives in a large, poor, sparsely populated catchment area. *Journal of the Maine Medical Association*. 63(6):106-112, 1972.

Lithium can be safely and efficaciously used in the treatment of manic-depressive psychosis if: it is given only to accurately diagnosed manic-depressives in the manic phase; it is always taken exactly as directed; the use of the medication is understood and side-effects and toxicity are recognized and dealt with early; and serum lithium levels are monitored regularly. It has been shown that, although lithium is a potentially troublesome and even dangerous medication, it can be offered safely to a large, spread-out, mainly low socioeconomic class, heterogeneous population through the cooperation of relatively less sophisticated outlying local general physicians, psychiatrists, and community mental health centers. Sixteen manic patients were maintained on serum lithium levels of 0.5 to 1.5 meq/L for 1 to

9 months. The initial response to the treatment was excellent in 14 cases and good in the other two; the long-term results were considered excellent in four cases and good in the other 12. Although eight of the patients thus treated required adjunctive phenothiazines and antidepressants, the doses given these patients were markedly lower than those given to other clinic patients. It is concluded that longer followup studies will be needed to confirm the belief that lithium maintenance therapy can be beneficially used with manic patients. 21 references.

119171 Sterlin, C.; Ban, T. A.; Jarrold, Louise. Hopital des Laurentides, l'Annonciation, Quebec, Canada The place of thiothixene among the thioxanthenes. *Current Therapeutic Research*. 14(4):205-214, 1972.

In a comparative study the differential activity of thiothixene, clopenthixol, and chlorprothixene was studied in a 12 week clinical trial. Statistically significant therapeutic changes occurred in the total scores of the Brief Psychiatric Rating Scale (BPRS), Verdun Target Symptom Rating Scale (VTSRS), and Nurses Observation Scale for Inpatient Evaluation (NOSIE) with clopenthixol, and in the total scores of the NOSIE with chlorprothixene. On all 3 scales, thiothixene produced a strong trend toward improvement. Analysis of the different items and symptom clusters of the 3 scales reveal significant improvement in excitement on the BPRS with clopenthixol; significant improvement in delusions with thiothixol and in impairment in object relations with clopenthixol on the VTSRS; and significant improvement in social competence, social interest, and retardation with thiothixene and in irritability, manifest psychosis, and retardation with clopenthixol on the NOSIE. No significant improvement occurred in any symptom or symptom cluster in the chlorprothixene treated group. The highest incidence of adverse reaction occurred with clopenthixol; the least with chlorprothixene. These findings support the hypothesis that thiothixene is an antipsychotic drug with particular effectiveness in affective psychopathology and with particular usefulness for patients who are socially withdrawn. 26 references. (Author abstract)

119762 Alexander, Leo; Berkeley, Austin W.; Cohen, Suzanne L. Tufts University Medical School, Boston, Mass. Which antidepressant for which patient? *Psychosomatics*. 13(1):49-56, 1972.



The specific target effects of various psychotropic drugs in the treatment of depression are considered. The case material consists of 735 cases of depressions studied over the 12 year period from 1956 to 1967. The depressions were divided into 3 major diagnostic groupings according to severity, presence or absence of guilt and according to the specific psychological issues of depression. Three major categories of treatment were administered, either alone or in sequence, included psychotropic drugs, electroconvulsive therapy and psychotherapy. Electroconvulsive therapy (ECT) significantly favored the recovery of the psychotic and psychotic borderline patients with depressions hinging on the issue of power did least well with ECT. Psychotherapy significantly favored the neurotic patients over the psychotic borderline patients. There were no differences in response to psychotherapy with respect to the other diagnostic categories. The tricyclic compounds appeared to affect all sub-categories equally without differentiation between psychotic and neurotic, presence or absence of guilt or by specific dynamic issue. MAO inhibitors alone and meprobamate - benactyzine alone appeared to favor the neurotic depressions. The MAO inhibitors favored depressions in whom the chief dynamic issue was power, while meprobamate - benactyzine favored the groups in whom the chief dynamic issue was loss with and without guilt. The combination of tricyclics with meprobamate - benactyzine significantly favored the classical depressions, especially those in whom the chief dynamic issue was guilt. MAO inhibitors in combination with meprobamate - benactyzine was significantly more effective than MAO inhibitors alone. 6 references.

120267 Feighner, John P.; King, Lucy J.; Schuckit, Marc A.; Croughan, Jack; Briscoe, William. Dept. of Psychiatry, Univ. of California at San Diego Medical School, La Jolla, CA 92037 **Hormonal potentiation of imipramine and ECT in primary depression.** *American Journal of Psychiatry*. 128(10):1230-1235, 1972.

A double-blind study was conducted to measure the possible enhancement of imipramine's antidepressant activity by L-triiodothyronine and dexamethasone and the possible enhancement of the antidepressant activity of electroconvulsive therapy (ECT) by dexamethasone. Ss were 49 patients with primary depression. Negative results of the study raise questions as to the efficacy of

these hormones in enhancing the antidepressant activity of imipramine and ECT. 17 references. (Author abstract modified)

120822 Demers, Robert G.; Mendler, Rose; Allen, Richard P.; Boyd, John. Department of Psychiatry, The Johns Hopkins University School of Medicine, Baltimore, MD **Edema and increased plasma renin activity in lithium treated patients.** *Behavioral Neuropsychiatry*. 3(9-10):20-24, 1972.

Six manic-depressive patients participated in a sodium balance study before, during, and after lithium treatment. Sodium retention was found during lithium treatment with slight edema formation in all patients, which responded to spironolactone treatment. The edema occurred only during a normal to high sodium intake. Urinary aldosterone levels, in most cases, were within the normal range; however, they appeared elevated compared to the sodium intake. Plasma renin activity (PRA) was very elevated in the four agitated patients. Low sodium diets and lithium treatment also tended to raise PRA values in these patients. The data suggests that PRA may be useful in diagnosing anxiety in complex clinical states. 13 references. (Author abstract)

120995 Coppen, Alec; Whybrow, Peter C.; Noguera, R.; Maggs, Ronald; Prange, Arthur J., Jr. Medical Research Council Clinical Investigation Ward, Greenbank, West Park Hospital, Epsom, Surrey, England **The comparative antidepressant value of L-tryptophan and imipramine with and without attempted potentiation by liothyronine.** *Archives of General Psychiatry*. 26(3):234-241, 1972.

In a trial lasting four weeks, depressed patients responded equally well to imipramine (150mg daily) or to L-tryptophan (9g daily). Patients who received a small dose of L-triiodothyronine (T3, liothyronine sodium) (25 micrograms daily for the first two weeks of treatment) in addition to imipramine showed a significantly better therapeutic response than patients who received either imipramine or tryptophan alone. Liothyronine did not enhance the therapeutic response to L-tryptophan. None of the treatments tested seemed to benefit any particular symptom of depression differentially. In particular, L-tryptophan had no specific effect on the sleep deficit of the syndrome. Liothyronine appeared to diminish the side effects of both imipramine and L-tryptophan in both men and women. 52 references. (Journal abstract)

**121335** McNamee, H.B.; Le Poidevin, D.; Naylor, G.J. Hartwood Hospital, Shotts, Lanark, Scotland *Methysergide in mania: a double-blind comparison with thioridazine.* Psychological Medicine (London). 2(1):66-69, 1972.

A double-blind controlled trial is described in which methysergide is compared with thioridazine. During 20 separate illnesses, 17 patients suffering from moderately severe to severe mania were given either methysergide or thioridazine in a 21-day trial. For most of the trial, patients received either 9mg methysergide or 450mg thioridazine daily; during a single 24-hour period 12mg methysergide or 600mg thioridazine were administered. On the basis of daily clinical assessments, it was concluded that methysergide proved significantly less effective than thioridazine. 15 references. (Author abstract modified)

**121900** Schmidt, M.; Gercke, H. Allgemeines Krankenhaus Ochsenzoll, III. Psychiatrische Abteilung, 2 Hamburg 62, Langenhorner Chaussee 560, Germany /*Clinical observations in Anafranil therapy.*/ Klinische Beobachtungen bei der Behandlung mit Anafranil. Medizinische Welt (Stuttgart). 23(13):466-467, 1972.

Treatment of patients with depression by means of Anafranil has met with varying degrees of success, from 'excellent' to completely negative responses. In 49 patients, i.v. infusions of two to 10 ampules of 25mg each were administered over several hours for 10 days up to three weeks, and followed in some cases by oral administration in the form of pills. Medication was halted whenever signs of intolerance or excessive reactions appeared. In some cases it was possible to correct these responses by varying the dosage or with supplementary medication. Excellent results, with respect to mood and coordination were obtained in eight of the 49 cases, good results in 16 cases, slight improvement was noted in 14 cases, no improvement in eight cases, and undesirable effects were produced in four cases. The efficacy of this drug is particularly evident in monosymptomatic cases. The somatic side-effects were neither unusual nor dramatic. However, the effects on the psychiatric symptomatology were of the nature that required treatment under hospital supervision. The therapy is likened to electroshock therapy in terms of efficacy. The nature of the manic phase of the psychosis affects the outcome of the therapy. The drug is particularly unsuitable for patients with paranoid hallucinatory symptomatology. 11 references.

**122315** Dufour, H.; Scotto, J.-C.; Luccioni, H.; Sutter, J.-M. Clinique universitaire de Psychiatrie de Marseilles, France /*Lithium salts in psychiatric therapy: concerning the curative and preventive treatment.*/ Les sels lithium en therapeutique psychiatrique: interet du traitement curatif et preventif. Annales Medico-Psychologiques (Paris). 130(2):246-252, 1972.

The clinical development of the manic phase of a manic-depressive psychosis under lithium treatment begins to show improvement between the sixth and tenth day. Lithium appears to be specific for the manic state in comparison to the other states of agitation; all the symptoms disappear progressively without any lethargic effect. One drawback in the treatment with lithium for acute manic episodes is that it is not available in injectable forms. As an antidepressant, in the depressive phase, the results have not been clear-cut, particularly in severe depressions. The use of lithium for prophylactic treatment appears to be effective when properly controlled. In other mental disorders, lithium has proven useful in the mitigation of the affective superstructures, although it has no hallucinolytic effect. Certain drawbacks in this therapy include the difficulty of obtaining lithium carbonate in France, and the precautions necessary in the continuous treatment with lithium in the hands of the psychiatrist who does not always have access to laboratory evaluation, and also in the need for long-term hospitalization. Lithium is contraindicated in some types of epilepsy, in decompensated cardiopathies, and in renal dysfunction of any kind; its use in pregnant women is not advisable.

**122976** Simpson, George M.; Amin, Mohammed; Angus, J.W. Scott; Edwards, J. Guy; Go, S. Hing; Lee, J. Hillary. Research Center, Rockland State Hospital, Dept. of Mental Hygiene, Orangeburg, NY 10962 /*Role of antidepressants and neuroleptics in the treatment of depression.* Archives of General Psychiatry. 27(3):337-345, 1972.

In two studies, the relationship among depressive symptoms, depression, and psychotropic drugs was examined. In the first study, imipramine hydrochloride was administered in low and high dosages to chronic schizophrenic patients with prominent apathy and anergy, viz, symptoms of depression. Stimulating properties (improvement in areas of motor retardation and emotional withdrawal, worsening in tension) were noted. Not all patients displayed signs of stimulation; no suppression of the stimulative effect oc-

curred with high dosages. The hypothesis that thiothixene might have a stimulative effect at low dosages in the above patients was not supported. In the second study, thiothixene was compared with amitriptyline hydrochloride in the treatment of 40 patients who had been diagnosed as suffering from endogenous depression. Global ratings and rating scales favored amitriptyline. These results suggest that antidepressants are the treatment of choice in the diagnosis of depression, but they are probably contraindicated in symptoms of depression. 32 references. (Journal abstract)

**122980** Bunney, William E., Jr.; Goodwin, Frederick K.; Murphy, Dennis L.; House, Kenneth M.; Gordon, Edna K. Section on Psychiatry, National Institute of Mental Health, Bethesda, MD 20014 The 'switch process' in manic-depressive illness. II. Relationship to catecholamines, REM sleep, and drugs. *Archives of General Psychiatry*. 27(3):304-309, 1972.

Data are reported which support the hypothesis that the neurotransmitter catecholamines (dopamine and/or norepinephrine) are functionally increased prior to the switch from depression into mania. Urinary norepinephrine was significantly elevated on the day prior to and during the manic episodes. Overall sleep and rapid eye movement were both decreased prior to and during the switch into mania in a few patients. Pharmacological data is also supportive of this hypothesis. Brief administration of tricyclic medication has been associated with rapid switches from depression into mania. Large doses of levodopa (which increases brain dopamine) were regularly associated with brief hypomanic episodes in patients with past histories of mania. On the other hand, alpha-methyl-p-tyrosine, which inhibits the synthesis of norepinephrine and dopamine, was associated with a transitory switch out of mania in a few patients. 47 references. (Journal abstract modified)

**122987** Small, Joyce G.; Milstein, Victor; Perez, Helio C.; Small, Iver F.; Moore, Donald F. Larue D. Carter Memorial Hospital, Department of Psychiatry, Indiana University School of Medicine, Indianapolis, IN 46202 EEG and neurophysiological studies of lithium in normal volunteers. *Biological Psychiatry*. 5(1):65-77, 1972.

Investigations of normal subjects taking lithium were conducted to establish whether or not neurophysiological changes observed earlier in pa-

tients were related primarily to the drug itself, or were influenced by factors such as psychiatric diagnosis, mood change, and response to treatment. Significant slowing of dominant background EEG frequencies occurred with lithium in both patients and normals. Paroxysmal EEG slowing appeared more in normal volunteers than in patients. Some peak latencies of the auditory evoked response were significantly prolonged with lithium in both groups. Averaged visual response latencies became a little shorter after lithium in the normals, but not in patients. Significant averaged potential amplitude variations, which were observed in the manic-depressive subjects in association with mood change, did not appear in the normals. The direct current (d-c) potential activity response characteristics of the normal group were atypical pre and postlithium, whether a function of apprehension or other factors. In patients there were distinct negative d-c amplitude shifts under all experimental conditions after lithium not found with normals. Side effects with lithium, mostly sleepiness, headaches, poor concentration, and slowing of mentation were more prominent in the normal volunteers than in patients. The incidence of toxic delirious reactions with lithium was 10% in both patient and normal groups. There were no significant changes in mood ratings or psychological test performance in the normal subjects. 7 references. (Author abstract modified)

**123351** Larson, Craig; Wang, Richard I.H. Clinical Pharmacology Service, Wood Veterans Administration Center, Milwaukee, WI 53193 Comments on treatment: lithium carbonate in manic-depressive illness. *Wisconsin Medical Journal*. 71(3):117-120, 1972.

The use of lithium carbonate in manic-depressive illness is reviewed. Topics discussed include: pharmacology; history; dosage; blood levels of lithium and concomitant therapy; toxicity and side effects; and precautions to be taken. Evidence continues to weigh overwhelmingly in favor of lithium carbonate in the treatment of the manic phase of manic-depressive illness and the prevention of recurrent episodes of manic-depressive illness, either the manic or the depressed phase. It is concluded that clinically, lithium carbonate can be given in effective doses with an adequate margin of safety, but knowledge of its side effects, toxicity, and precautions are necessary preceding the use of lithium carbonate. Frequent serum lithi-



um levels provide the physician not only with information about the lithium level but also information as to whether the patient is in fact taking his medication. 23 references. (Author abstract modified)

**123887** Kimbrell, Isham, Jr.; Overall, John E.; Faibish, George M.; Pokorny, Alex D. Psychiatry Service, VAH, Dallas, TX **Factors influencing response to major tranquilizer medications.** *Diseases of the Nervous System.* 33(4):223-230, 1972.

A sample of 217 patients who were selected by doctor's choice for treatment with major tranquilizer drugs including phenothiazines and butyrophenones was studied. In spite of doctor's choice assignment to a single major class of drug treatment, empirical cluster analysis methods resulted in the recognition of three distinct phenomenological subtypes within the treatment sample. The three types were found to have significantly different therapeutic outcomes. Patients with thinking disturbance profile patterns responded consistently well to the major tranquilizer drugs. Patients with retarded depression or anxious depression profile patterns responded less well, and responses within those types seemed to depend to greater extent on nondrug factors. The results are interpreted as confirming the specific indications of antipsychotic drugs and suggest that empirical methods may be useful in sharpening classification concepts for doctor's choice of drug treatment. 17 references. (Author abstract)

**125200** Goodwin, Frederick K.; Post, Robert M.; Murphy, Dennis L. Laboratory of Clinical Science, National Institute of Mental Health, Bethesda, MD 20014 **The effects of electroshock therapy, lithium and tricyclic antidepressant treatment on probenecid-induced accumulations of CSF amine metabolites in depressed patients.** (Unpublished paper). Bethesda, MD NIMH, 1972, 21 p.

The effects of electroshock therapy, lithium, and tricyclic antidepressant treatment on probenecid induced accumulations of cerebrospinal fluid (CSF) amine metabolites in depressed patients are reported. The amine metabolite levels after probenecid in relation to diagnostic and symptomatic subgroups of depressed patients were studied. In 26 depressed patients, probenecid administration produced 400% increase in 5-hydroxyindoleacetic acid (5-HIAA) and a 100% increase in homovanillic acid

(HVA) in the CSF. The amount of HVA which accumulated on probenecid was not significantly altered by lithium carbonate or tricyclic antidepressant. Compared to drug free depressed patients, those treated with electroshock therapy, imipramine, amitriptyline, and lithium have lower probenecid induced accumulations of 5-HIAA in the CSF. The data do suggest that the turnover of serotonin in the central nervous system decreases after depressed patients receive treatment. The data presented here provide further evidence that a technique which measures a dynamic function, the change of 5-HIAA or HVA induced by probenecid, is capable of uncovering differences which are often obscured by static baseline values alone. 40 references.

**125862** Kawakami, Kiyoshi. Hirosaki University, School of Medicine, Japan **Masked depression in internal medicine -- the frequency and clinical characteristics.** *Journal of Japanese Psychosomatic Society (Tokyo).* 12(2):99-101, 1972.

A discussion on the frequency and clinical characteristics of masked depression is presented, from the viewpoint of internal medicine. From May 1970 to April 1971, 3043 patients visited the Department of Internal Medicine at Hirosaki University Hospital, and 5%, or 146 patients were diagnosed to be psychosomatic. Psychosomatic interviews, the Cornells Medical Index, and the Yatabe-Guilford Test were given to 146 patients and 55 were diagnosed to be in a depressive state; 14 out of 55 were masked depressives. Major somatic symptoms of patients are discussed along with test results. It is also argued that pharmacological treatment with antidepressants is not effective. 3 references.

**125864** Hasegawa, Naoyoshi. Center of Psychosomatic Medicine, Akita University School of Medicine, Japan **Masked depression in obstetrics and gynecology.** *Journal of Japanese Psychosomatic Society (Tokyo).* 12(2):109-111, 1972.

A brief discussion on masked depression is presented, from the viewpoint of obstetrics and gynecology. Topics include: the yearly change in the number of patients with masked depression who visit the Department of Obstetrics and Gynecology at Akita University Hospital; the type of complaints and frequency, such as insomnia (75%), lack of appetite (56%), sense of fatigue (55%), decrease in sexual desire (40%), and ir-

regular menstruation (63%), depressive feeling (70%). The age of onset, diagnosis, and the results of Self Rating Depression Scale constructed by W.W.K.Zung are discussed. Effective drugs for masked depression include imipramine, amitriptyline, monochlorimipramine, and dextepine hydrochloride.

**125967** Koran, Lorrin M.; Maxim, Peter E. National Institute of Mental Health, 5454 Wisconsin Avenue, Chevy Chase, MD 20015 **Field dependence in manic-depressive patients.** *Journal of Nervous and Mental Disease.* 155(3):205-208, 1972.

It was hypothesized that field dependency scores on symptomatic patients would change with a change in clinical state. Field dependence as measured by Oltman's portable rod and frame test apparatus was determined initially in 16 symptomatic patients who were without medication. Serial measurements were made on these same patients when symptom free on lithium carbonate and on placebo. Scores obtained showed that field dependency in these patients was unaffected by their clinical state or by lithium carbonate therapy and that these patients resembled normal volunteers in their score distribution. 8 references. (Author abstract)

**125969** Himmelhoch, Jonathan M.; Detre, Thomas; Kupfer, David J.; Swartzburg, Marshall; Byck, Robert. Department of Psychiatry, Yale University School of Medicine, New Haven, CT 06510 **Treatment of previously intractable depressions with tranylcypromine and lithium.** *Journal of Nervous and Mental Disease.* 155(3):216-220, 1972.

Twenty one depressed patients with so called bipolar characteristics and treated with tranylcypromine are reported. Twenty of these were already on lithium carbonate and 20 had failed to respond to these tricyclic antidepressants in the past. Eighteen patients were hypersomnic and three experienced no change in sleep pattern when depressed. Sixteen out of 21 had a good to excellent response to tranylcypromine. Four out of five failures demonstrated an irritable-paranoid tableau and were diagnosed schizoaffective in the past. Questions about the mechanism of action of monoamine oxidase inhibitors and of lithium are raised. The possible existence of subtypes of depression in addition to unipolar and bipolar is also discussed. 18 references. (Author abstract)

**125999** Suzuki, Jinichi. Department of Internal Medicine of Nagahama-cho Branch, Tohoku University School of Medicine, Japan **Masked depression in various fields in clinical medicine -- from the standpoint in internal medicine especially in the fields of treatment.** *Journal of Japanese Psychosomatic Society (Tokyo).* 12(2):120-121, 1972.

A brief discussion on treatment of masked depression is presented, from the standpoint of internal medicine. The number of patients with masked depression hospitalized at Nagamachi Hospital over a three year period was 43, which corresponds to 13% of all patients. Among the 43, 28 cases are functional disorders and 15 organic disorders. Chlordiazepoxide was not an effective treatment drug, whereas diazepam was effective in 40% of the cases and antidepressants in 50%. A case study is presented of a 42-year-old man with masked depression in the form of a gastric ulcer.

**126205** Cundall, R.L.; Brooks, P.W.; Murray, L.G. State Hospital, Carstairs Junction, Lanark, Scotland **A controlled evaluation of lithium prophylaxis in affective disorders.** *Psychological Medicine (London).* 2(3):308-311, 1972.

In a double-blind crossover trial lithium carbonate was found to be significantly superior to placebo in the prophylaxis of manic-depressive (bipolar) psychosis. A striking feature was the high incidence of manic or hypomanic attacks in patients who relapsed on placebo. Patients participated in the trial with their full knowledge and consent. 4 references. (Author abstract)

**126232** Rifkin, Arthur; Quitkin, Frederic; Carrillo, Carlos; Blumberg, Arnold G.; Klein, Donald F. Hillside Hospital, Glen Oaks, NY 11004 **Lithium carbonate in emotionally unstable character disorder.** *Archives of General Psychiatry.* 27(4):519-523, 1972.

The effects of lithium carbonate on the mood dysregulation of 21 patients with emotionally unstable character disorder (EUCD) were examined. EUCD is defined as a character disorder indicating chronic maladaptive behavior patterns such as poor acceptance of reasonable authority, truancy, poor work history, manipulateness and characterized by a core psychopathological disturbance of depressive and hypomanic mood swings that last hours to days. Examination of these patients in a six week double-blind random assignment

cross over study comparing lithium carbonate to placebo, using a global measure of mood swings, indicated that lithium carbonate was significantly superior. This was also true for a week's rating of the mean of the daily range of mood swings. Findings suggest that EUCD is an affective illness and lithium carbonate joins chlorpromazine as a valuable, and perhaps superior, therapy. 13 references. (Author abstract modified)

**126500** Van der Velde, Christiaan D.; Gordon, Malcolm W. Abraham Ribicoff Research Center, Norwich Hospital, Norwich, CT 06360 **Biochemical and pharmacological variations in manic-depressive illness.** *American Journal of Psychiatry.* 129(3):337-342, 1972.

In a study of the response of 21 manic-depressives to imipramine, the biochemical and pharmacological variations in manic-depressive illness were followed over a period of two years. During this time both manic and depressed states were treated. Most patients responded differently to this treatment at different times. The variation in response is considered in the context of a hypothesized biochemical instability in the manic-depressive that is manifest in behavioral, pharmacological, and biochemical measures. 12 references. (Journal abstract modified)

**127215** Schildkraut, Joseph J.; Draskoczy, Paul R.; Gershon, Elliot S.; Reich, Peter; Grab, Edwin L. Harvard Medical School, Boston, MA 02115 **Catecholamine metabolism in affective disorders -- IV. Preliminary studies of norepinephrine metabolism in depressed patients treated with amitriptyline.** *Journal of Psychiatric Research (Oxford).* 9(3):173-185, 1972.

Clear evidence was found that clinical administration of amitriptyline produces changes in the metabolism of norepinephrine in depressed patients and suggests that these changes may be involved in the biochemical mechanism of action by which amitriptyline produces its clinical antidepressant effects. Decreases in 3-methoxy-4-hydroxyphenylglycol (MHPG) and 3-methoxy-4-hydroxy-mandelic acid (VMA) excretion were observed during treatment with amitriptyline suggesting that amitriptyline may decrease the synthesis of norepinephrine in the brain as well as in peripheral sympathetic nerves. In contrast to imipramine, which has been reported to have been most effective in those patients excreting the lowest levels of MHPG, preliminary findings sug-

gest that amitriptyline may be more effective in depressed patients with relatively higher levels of MHPG. This may provide a rational basis for choosing between amitriptyline or imipramine in the treatment of patients with endogenous depressions. 39 references. (Author abstract modified)

**127216** Prange, Arthur J., Jr.; Wilson, Ian C.; Knox, Angelina E.; McClane, Thomas K.; Breese, George R.; Martin, Billy R.; Alltop, Laco B. University of North Carolina School of Medicine, Chapel Hill, NC 27514 **Thyroid-imipramine clinical and chemical interaction: evidence for a receptor deficit in depression.** *Journal of Psychiatric Research (Oxford).* 9(3):187-205, 1972.

The sequence of chemical and clinical changes caused by thyroid stimulating hormones (TSH) given in conjunction with imipramine (IMP) were studied. Normal women were given IMP plus placebo (P) plus triiodothyronine (T3). Depressed women were given IMP plus P or IMP plus TSH. In normal women treatments tended to diminish the excretion rates of normetanephrine (NMN), 3-methoxy-4-hydroxy phenylglycol (MHPG), and vanilmandelic acid (VMA). Treatments increased the excretion of tryptamine (TA). In depressed women pretreatment excretion rates were normal for all substances save VMA, which was slightly increased, and 5-hydroxyindoleacetic acid which was greatly increased. Treatments tended to increase the excretion of NMN. IMP + TSH patients improved faster than IMP + P patients. This data suggests that in some depressed patients there may exist a deficit in aminergic receptor sensitivity. The postulated deficit appears to be compensated in the periphery but not in the brain. Even when receptor sensitivity is normal, an induced increment as produced by adjunctive hormone treatment, may contribute to recovery. 57 references. (Author abstract modified)

**127217** Bunney, William E., Jr.; Gershon, Elliot S.; Murphy, Dennis L.; Goodwin, Frederick K. Laboratory of Clinical Science, National Institute of Mental Health, Bethesda, MD 20014 **Psychobiological and pharmacological studies of manic-depressive illness.** *Journal of Psychiatric Research (Oxford).* 9(3):207-226, 1972.

The clinical and biochemical effects of L-dihydroxyphenylalanine (L-Dopa), the amino acid precursor of dopamine and norepinephrine, and alpha-methyl-para-tyrosine (AMPT), a specific in-



hibitor of tyrosine hydroxylase have been studied in a group of patients with affective illness. L-Dopa was clearly ineffective as an antidepressant in most of the 23 patients studied. Only 25% showed a consistent improvement in depression. Five of eight manic patients treated with AMPT improved. Two manic patients became worse and one of these improved when placebo was substituted. Evidence is presented documenting that these two drugs produced centrally mediated physiological, biochemical and behavioral effects. Biochemical, behavioral, sleep, and pharmacological data are reviewed which are compatible with the hypothesis that the switch into mania is associated with an increase in functional brain norepinephrine and/or dopamine, while the switch out of mania is associated with a decrease. It is also hypothesized that one possible genetic defect relevant to the switch into mania might involve a partial block in reuptake of neurotransmitter amines. 78 references. (Author abstract modified)

127220 Klerman, Gerald L. Massachusetts General Hospital, Boston, MA 02114 **Drug therapy of clinical depressions -- current status and implications for research on neuropharmacology of the affective disorders.** *Journal of Psychiatric Research* (Oxford). 9(3):253-270, 1972.

Research on neurochemistry and neuropharmacology of the affective disorders rests upon evidence of the therapeutic efficacy of antidepressant drugs. The evidence for clinical efficacy is reviewed with particular attention to the role of differential response and the search for meaningful subtypes among the larger group of depressions. The three classes of drugs considered to have specific antidepressant actions clinically are: 1) amphetamines and other psychomotor stimulants, 2) monoamine oxidase inhibitors, 3) tricyclic derivatives related to imipramine. Considerable research efforts are underway to identify the characteristics of depressed patients who respond differentially to one or another compound in the expectation that these differential responses can contribute to developing newer models of etiology and nosology. 65 references. (Author abstract modified)

127390 Bey, D. R.; Chapman, R. E.; Tornquist, K. L. Franklin Avenue Medical Center, Normal, IL 61761 **A lithium clinic.** *American Journal of Psychiatry*. 129(4):468-470, 1972.

A lithium clinic, which provides an effective method of managing and keeping track of patients taking lithium carbonate is described. The clinic, conducted by a registered nurse under psychiatrists' supervision, generally helps patients to achieve a better understanding of lithium, educating them concerning its toxic and side-effects and the levels of lithium in the blood. It is felt that such a clinic may help prevent relapses of affective symptoms. 28 references. (Journal abstract)

127880 Polatin, Phillip. College of Physicians and Surgeons, Columbia University, New York, NY **Lithium carbonate prophylaxis in affective disorders. (Clinical versus research applications).** *Disorders of the Nervous System*. 33(7):472-475, 1972.

The use of lithium carbonate in the treatment of patients with affective disorders is examined. It is most important to individualize each patient, to determine whether the prophylactic use of lithium is really in the patient's best interest, rather than to prescribe lithium as a prophylactic indiscriminately. Some patients who have had unipolar or bipolar attacks for years have so accommodated to them that they consider these attacks as basic facets of their personalities or character structures and really want no change in their way of life. The type of patients described probably represent a small proportion of patients who will refuse lithium prophylaxis either frankly and openly or secretly, sabotaging therapy by forgetting to take the daily prescribed intake or else they may go off the lithium themselves without comment or discussion with their physicians. (Author abstract modified)

129737 Tanaka, Masatoski; Nakajima, Masami; Ito, Koh; Miyake, Yoshio; Ogawa, Nobuya. Institute of the Brain Diseases, Kurume University School of Medicine, Japan **The effect of the amitriptyline on the masked depression -- comparative double blind controlled study.** *Journal of Japanese Psychosomatic Society* (Tokyo). 12(2):129-142, 1972.

The effect of amitriptyline in the treatment of masked depression is reported. In a double-blind controlled test 30 patients with masked depression were administered 40 mg/day of either amitriptyline or an inert placebo for two weeks. Results show that 76.9% of the patients who were administered amitriptyline and 25.0% of the patients who were administered the placebo improved.

The effect of amitriptyline on both somatic and psychiatric symptoms first appeared within one week and were quite evident by the second week. Amitriptyline proved effective on palpitation of the heart, irritation, loss of interest, and lack of hope. No significant side-effect was observed except a dry mouth. It is concluded that amitriptyline is effective in the treatment of masked depression, and that an appropriate increase in dosage might be necessary in cases where there is no improvement with a dosage of 40 mg/day. 12 references.

**130109** Schildkraut, J. J.; Keeler, B. A.; Rogers, M. P.; Draskoczy, P. R. no address Catecholamine metabolism in affective disorders: a longitudinal study of a patient treated with amitriptyline and ECT. *Psychosomatic Medicine*. 34(5):470, 1972.

At the annual meeting of the American Psychosomatic Society, a longitudinal study of the changes in catecholamine metabolism and the affective state of a woman patient who experienced several episodes of depression is reported. During the first episode of depression, she was treated with amitriptyline, showed transient clinical improvement and an increase in urinary norepinephrine (NE) and normetanephrine (NM). In the next period of depression, despite administration of amitriptyline, NE and NM returned to their low levels. In a subsequent episode of depression, the patient was treated with ECT and NE and NM levels were lower than they were in the initial episode of depression. During treatment depression decreased, and the patient became hypomanic after ECT was terminated. NE and NM were higher after ECT when the patient was hypomanic and before ECT when the patient was depressed. A consistent association was observed between changes in NE metabolism and affective state. (Journal abstract modified)

**130388** Fitzgerald, Roy G. Hall-Mercer Mental Health Center, Pennsylvania Hospital, Philadelphia, PA 19107 Mania as a message: treatment with family therapy and lithium carbonate. *American Journal of Psychotherapy*. 26(4):547-554, 1972.

Experiences derived from intense research and clinical interaction with over 40 biphasic manic-depressive patients indicates that family oriented psychotherapy can improve the verbal communications between manics and those around them, can help them continue to take lithium, and can

help prevent relapses of manic-depressive psychosis. Although lithium is initially effective in many manic patients, lithium responders may relapse as outpatients. Problems in the treatment of manics on lithium are discussed, and ways in which psychotherapy can be used effectively in conjunction with drug treatment for hospital patients and outpatients are outlined. 13 references.

**130547** Savage, Charles; Messiha, Fathy S. Johns Hopkins University, School of Medicine, Baltimore, MD Psychiatric and biochemical profiles of lithium therapy in mania. (case report). *Diseases of the Nervous System*. 33(6):409-412, 1972.

Determinations were made of urinary dopamine, norepinephrine, and their respective major metabolites, vanillylmandelic acid, and homovanillic acid, prior to and during the course of lithium therapy in a manic case ending in stabilization. Clinical and biochemical results are related in this longitudinal, blind, single case study. Elevated urinary dopamine may be associated with the manic state of manic-depressive psychosis and more normal levels with the abatement of manic symptoms. The development of an aphrodisiac effect along with elevated dopamine excretion is of interest. Brain catecholamines might play an important role in the regulation of the secretion of hormones from the anterior pituitary. 31 references. (Author abstract modified)

**131344** Toru, M.; Takamizawa, M.; Kariya, T.; Kobayashi, K.; Takahashi, R. Tokyo Medical and Dental University, Dept. of Neuropsychiatry, Tokyo, Japan A double-blind sequential comparison of doxepin with amitriptyline in depressed patients. *Psychosomatics*. 13(4):241-250, 1972.

The relative effectiveness of doxepin and amitriptyline on depressed patients was tested with 55 subjects by means of a double-blind, matched pair method. In 21 pairs who completed a three week course of treatment, no significant difference in effectiveness between the two drugs was demonstrated by sequential analysis; 83% of patients using doxepin were markedly, moderately, or slightly improved as opposed to 79% of patients using amitriptyline. No significant difference was found between drug effectiveness in three categories, namely, depressive symptoms, neurotic symptoms, and hypochondriasis. Side effects such as constipation, eye symptoms, tremor, rigidity, and dry mouth were seen in 73% of pa-

tients receiving doxepin and in 90% of patients receiving amitriptyline. 11 references.

**131960** Shapiro, Arthur K.; Shapiro, Elaine; Wayne, Henriette. Department of Psychiatry, New York Hospital-Cornell University Medical Center, 525 E. 68th St., New York, NY 10021 **Treatment of Tourette's syndrome: with haloperidol, review of 34 cases.** *Archives of General Psychiatry.* 28(1):92-97, 1973.

In a study of 34 patients with Gilles de la Tourette's syndrome 21 patients (3-13-years-old) were treated with haloperidol and followed for two months to five years. Haloperidol was a difficult drug to use effectively. The dosage varied between 6-180mg and had to be titrated against an endpoint of efficacy compared with side-effects. Most patients were able to achieve over 90% decrease in their symptoms after one year of treatment. Other minor and major tranquilizers were less effective. Other chemotherapy and psychotherapy were ineffective. Spontaneous decrease or increase of symptoms are common and lead to difficulty in evaluation of clinical course. 16 references. (Author abstract modified)

**132189** Gram, L.F.; Rafaelsen, O.J. Psychochemistry Institute, Rigshospitalet, 9 Blegdamsvej, DK-2100 Copenhagen 0, Denmark **Lithium treatment of psychotic children and adolescents: a controlled clinical trial.** *Acta Psychiatrica Scandinavica (Kobenhavn).* 48(3):253-260, 1972.

Eighteen psychotic children and adolescents, pupils at a special school, were treated with lithium and placebo in a six plus six month double-blind crossover trial. They had all been psychotic from before age five. Eleven patients were rated as best in the lithium period, five as unchanged, and two as best in the placebo period. Both parental and teacher assessments showed a statistically significant positive effect of lithium. No general mode of lithium action could be detected when the qualitative aspects of the effect were analyzed. All kinds of symptoms were influenced. Side-effects were rare and harmless and appeared as often in the placebo period as during lithium treatment. 9 references. (Author abstract)

**132754** Poli, N.; Nappi, A. Ospedale Psichiatrico di Bisceglie, 'Casa della Divina Provvidenza', Italy **The use of a fixed dosage combination of amitriptyline and chlorthalidate in the treatment of pa-**

**tients suffering from anxiety and depression./ L'associazione amitriptilina-clordiazepossido in rapporto posologico fisso nel trattamento terapeutico in soggetti con sintomatologia ansioso-depressiva. Rassegna di Studi Psichiatrici (Siena, Italy).** 61(2):186-194, 1972.

Sixty patients aged 32 to 75 years suffering from depression were treated with Librium and amitriptyline. Their depressions were diagnosed as endogenous, reactive, neurotic, involutional, or symptomatic. Their symptoms included anxiety, fear, neurovegetative manifestations, cenesthesiopathy, insomnia, isolation, crying spells, and hypochondriacal ideas. Daily treatment consisted of 2-8 capsules containing 10mg Librium and 25mg amitriptyline, each with satisfactory results. Anxiety was reduced from 85 to 30%, fear from 80 to 30%, neurovegetative disturbances from 65 to 20%, crying spells from 60 to 15%, cenesthesiopathy from 55 to 10%, insomnia from 50 to 5%, isolation from 45 to 5% and hypochondriacal ideas from 75 to 25%. The patients regained their psychic balance from the first days of administration. Side-effects like somnolence, asthenia, and dryness of the mouth gradually disappeared with continuing treatment. 39 references.

**132972** Goodwin, Frederick K.; Ebert, Michael H. Laboratory of Clinical Science, NIMH, Bethesda, MD **Lithium in mania: clinical trials and controlled studies.** (Unpublished paper) Bethesda, MD, NIMH, 1972, 22p.

Recent studies comparing lithium to chlorpromazine question the specificity of lithium against the manic syndrome. In uncontrolled studies of this sort, 334 out of 413 patients showed improvement in mania during acute lithium treatment, and controlled studies showed basically the same effect. Lithium has a more specific effect against pure mania than the phenothiazines, and produces its antimanic effects without the non-specific sedation and tranquilization seen with phenothiazines. Lithium alone is the treatment of choice for those manic patients whose hyperactive behavior can be managed during the lag period, but chlorpromazine plus lithium is the best approach for manic patients whose hyperactivity requires immediate control. For patients in the schizoaffective group, phenothiazines or haloperidol are superior to lithium for treatment of the acute episode. 48 references. (Author abstract modified)



**132989** Murphy, Dennis L.; Baker, Max; Goodwin, Frederick K.; Kotin, Joel; Bunney, William E., Jr. Laboratory of Clinical Science, National Institute of Mental Health, Bethesda, MD **Behavioral and metabolic effects of L-tryptophan in unipolar depressed patients.** (Unpublished paper) Bethesda, MD, NIMH, 1972. 15 p.

L-Tryptophan was administered at an average dose of 9.6grams for an average of 20 days to 16 unipolar depressed patients in a double-blind study. Thirteen of these individuals showed no change or became worse on L-tryptophan, and only three showed a decrease in either depression or psychosis ratings. Cerebrospinal fluid and urinary 5-hydroxyindoleacetic acid levels and platelet serotonin levels were increased in these patients during L-tryptophan treatment. The lack of clinical response in the majority of these patients does not support the suggestion that L-tryptophan might be a useful antidepressant agent. Similarly, the lack of clinical change does not support the hypothesis that a functional brain deficiency in serotonin is directly involved with the pathogenesis of depressive disorders. 37 references. (Author abstract modified)

**133094** Jones, Granville L.; Estrada, Sergio D. Fair Oaks Hospital, Summit, NJ **Lithium in treatment and prevention of affective disorders.** Journal of the Medical Society of New Jersey. 69(9):747-749, 1972.

A study is presented in which over 50% of the patients with affective disorders have continued on lithium with good results and with no adverse side-effects. One patient in the group died, but the cause of death was not drug related. Four of the 38 were discontinued because of side-effects. In some of these, side-effects were observed despite blood levels in the range usually considered safe and effective. It appears that lithium is effective in both manic and depressive conditions, and it seems quite effective in preventing recurrences of sufficient magnitude to require hospital admission. (Author abstract modified)

**133152** no author. no address **Using hormone to lift depression.** Medical World News. 13(44):561, 1972.

Reports are reviewed which demonstrate that thyrotropin releasing hormone (TRH), an agent involved in stimulating thyroid production in the body, can function as an antidepressant. TRH in-

fluences production of thyrotropin in the pituitary which in turn stimulates the secretion of thyroid hormone; however, TRH also acts without involving the pituitary or the secretion of thyroid hormone. TRH has acted as an antidepressant in animals, and clinical studies are now underway. In five patients suffering from various types of depression including manic and involutional, treatment with TRH in a double-blind crossover study resulted in improvement in all five. The thyrotropin (TSH) levels in the plasma of these subjects were markedly decreased after treatment, suggesting an abnormality in the hypothalamic pituitary axis in some cases of mental depression, and indicating that the effects of TRH were not mediated by TSH or thyroid hormones. Another report demonstrated that thyroid hormones and TSH potentiate the action of imipramine in clinical depression. A further investigation of the effects of TRH in 10 patients suffering with severe depression revealed improvement in the vast majority in the double-blind procedure, with saline as control. Saline treated patients showed equivocal changes. Data in several experiments suggest a disorder of the hypothalamus itself in the etiology of depression.

**133963** Klerman, Gerald L. Harvard Medical School, Boston, MA **Drugs in the treatment of depression.** Illinois Medical Journal. 142(1):44-47, 84, 1972.

Drugs in the treatment of acute depression are discussed. A widely prevalent clinical disorder, depression may be the most commonly treated psychiatric syndrome among adults. Three classes of specific antidepressants are reviewed, the psychomotor stimulants, monoamine oxidase inhibitors, and tricyclic antidepressants. Also discussed is the place of phenothiazine, sedative hypnotics, minor tranquilizers, and electroconvulsive therapy (ECT) in the treatment of depression, such as mania, relapse, recurrence and chronicity. It is concluded that when deciding which treatment to use for a patient and when evaluating the relative success of treatment, the psychiatrist should be aware of certain salient features of the clinical disorder, especially the variety of symptoms of depression, the high spontaneous improvement rate, and the likelihood of recurrence after recovery for certain patients. The available antidepressant drugs do not cure depression; they ameliorate the patient's symptoms and facilitate his personal adjustment and social adaptation. 11 references.

**134111 Fieve, Ronald R.; Meltzer, Herbert; Dunner, David L.; Levitt, Morton; Mendlewicz, Julien; Thomas, Ann.** New York State Psychiatric Institute, 7222 West 168th Street, New York, NY 10032 **Rubidium: biochemical, behavioral, and metabolic studies in humans.** *American Journal of Psychiatry*. 130(1):55-61, 1973.

A growing body of experimental evidence indicates that rubidium possesses unique neurophysiological characteristics in animal systems, suggesting a need for investigating its antidepressant potential in humans. Lithium, an element in the same periodic series, has been used successfully in the treatment of mania. A number of studies have demonstrated that rubidium and lithium have contrasting behavioral, EEG, and biochemical properties. Over a period of 20 to 86 days, five depressed patients received varying doses of rubidium chloride, up to a maximum of 370mEq retained. No immediate or long-term side-effects were recorded in this preliminary dose range. Behavioral and metabolic data are presented for these patients, along with a discussion of the safety factors. 25 references. (Author abstract)

**134112 Chien, Ching-Piao; Cole, Jonathan O.** Boston State Hospital, Boston, MA 02024 **Depot phenothiazine treatment in acute psychosis: a sequential comparative study.** *American Journal of Psychiatry*. 130(1):13-18, 1973.

A study was designed to explore the clinical efficacy of fluphenazine enanthate (FE) alone in acute psychotic patients, using chlorpromazine (CPZ) as a standard control treatment. A third treatment, the combination of FE and CPZ, was also compared since this type of combined medications is often used in clinical practice. A sequential analysis design was employed. This enabled statistically significant differences to be obtained after 46 newly admitted psychotic patients had been studied. Both FE and FE combined with CPZ were superior to CPZ alone at this level. The two treatments involving FE were not significantly different from each other. Although FE alone or in combination with CPZ produced a higher incidence of extrapyramidal side-effects than did CPZ alone, despite the addition of prophylactic antiparkinsonian medication, these side-effects were adequately controlled by the use of additional antiparkinsonian medication. This finding casts some doubt on the efficacy of routine prophylactic antiparkinsonian medication. The study demonstrates that FE alone is a useful and effective agent in the treatment of newly

hospitalized acutely psychotic patients. The addition of CPZ appears to do little to increase FE's therapeutic efficacy. At the dosage used (an average of about 350mg of CPZ per day), CPZ was significantly less effective than FE, either alone or in combination, in the treatment of acute psychotic states. 25 references. (Author abstract)

## 10 DRUG TRIALS IN NEUROSES

**119035 Rickels, Karl; Gingrich, Russell L., Jr.; McLaughlin, F.W.; Morris, Richard J.; Sablosky, Lester; Silverman, Howard; Wentz, Henry S.** 203 Piersol Building, University Hospital, 3400 Spruce Street, Philadelphia, PA 19104 **Methylphenidate in mildly depressed outpatients.** *Clinical Pharmacology and Therapeutics*. 13(4):595-601, 1972.

A double-blind placebo control led trial of methylphenidate (30mg/day) was conducted with 101 general practice and symptomatic volunteer patients diagnosed as mildly to moderately depressed with concomitant fatigue or apathy. Sixty one percent of the patients on methylphenidate and 57% of the patients on the placebo reported side-effects from the substances. It is postulated that the high incidence of reported side-effects was due to the high daily dosages of the substances coupled with possible biases on the part of the physicians involved in the study against the use of methylphenidate in depressed patients. The physicians reported identical degrees of improvement in the depressed conditions of the methylphenidate and placebo patients after 4 weeks of treatment. As based on the Zung self-rating depression scale, however, the methylphenidate patients showed significantly greater improvement than the placebo patients. It was also found that patients who drank three or more cups of coffee per day improved significantly more with methylphenidate than with the placebo, while patients drinking 0 to 2 cups per day did not. It is concluded that methylphenidate is particularly effective in improving performance in retarded rather than agitated depression and that it is especially beneficial in patients who demonstrate a desire for stimulatory effects by a relatively high coffee intake. 8 references.

**119612 Power, Tim.** no address **Treating phobias -- with a drug.** *World Medicine (London)*. 7(9):49-50, 1972.

Irrational fears or obsessions which can become not only chronic, but so severe as to be disabling,

are discussed. Treatment is usually complex and time consuming. A Colchester, England psychiatrist has developed a new technique of chemotherapy. The treatment is simple, but if patients are chosen carefully it is claimed to be 100% effective. The treatment consists of a three or four week series of intravenous drips of clomipramine given in relatively large doses. One proof of the treatment lies in the fact that panic habits have been eradicated so fully in some patients that long standing dependencies on spouses or relatives disappeared.

**119984** Bianchi, G. N.; Phillips, J. Institute of Psychiatry, Denmark Hill, London S. E. 5, England A comparative trial of doxepin and diazepam in anxiety states. *Psychopharmacologia* (Berlin). 25(1):86-95, 1972.

The effects of doxepin and diazepam upon anxiety states were studied in a double-blind controlled trial which involved 50 anxious neurotics. The drugs were prescribed for 3 weeks and there were no dropouts. The mean dose of doxepin was 113mg/day and of diazepam 21mg/day. Ratings of anxiety, physical symptoms, and depression were made on entry to the trial and after 7, 14, and 21 days. The drugs proved to be of comparable efficacy in decreasing anxiety and somatic complaints but doxepin controlled depressive symptoms better. Patients taking diazepam suffered more often from drowsiness, muscular weakness, and constipation. 17 references. (Author abstract)

**121309** Grainger, G.J. Clapham, London S.W.4, England A clinical study of 'limbitrol' in the treatment of anxiety/depression in general practice. *Practitioner* (London). 208(1248):807-809, 1972.

The antidepressant qualities of a fixed combination of chlordiazepoxide and amitriptyline (limbitrol) in the treatment of anxiety and depression were evaluated. Forty six patients were assessed for anxiety and associated symptoms, after which they were treated for 6 weeks with limbitrol 5 (5mg of chlordiazepoxide and 12.5mg of amitriptyline), limbitrol 10 (10mg of chlordiazepoxide and 25mg of amitriptyline), or some combination of the two. After 6 weeks, 29 of the patients reported excellent results from the treatment, 11 reported good results, five reported fair results, and one reported poor results. Although many of the patients complained of drowsiness resulting from the medication, this was usually alleviated following a reduction in dosage; the

reduction in dosage did not result in any loss of therapeutic efficacy. In the majority of patients, anxiety was allayed within the first week or two of the treatment, while there was a noticeable improvement in depression after 2 to 4 weeks of treatment. 1 reference.

**121310** no author. no address *Pimozide in anxiety neurosis*. *Practitioner* (London). 208(1248):836-839, 1972.

A double-blind comparison concerning the effects of pimozide and chlordiazepoxide in the treatment of anxiety neurosis was conducted. Seventy two male and female patients were assessed for severity of symptoms, using the participating doctor's global assessments, the G.P.R.G. anxiety rating scale, and the National Institute of Mental Health (N.I.M.H.) 35 item self-rating scale. There were no statistically significant differences in the results recorded with the two medications. It was therefore concluded that the two drugs had similar anxiolytic effects and produced side-effects which were similar in terms of incidence, nature, and severity. It was noted, however, that a single daily dose of pimozide was as effective as a thrice daily dosage of chlordiazepoxide; pimozide would therefore be of more value for the ambulatory patient in general practice.

**121397** Pecknold, J.C.; Raeburn, J.; Poser, E.G. Behavior Therapy Unit, Douglas Hospital, 6875 LaSalle Boulevard, Montreal 204, Quebec, Canada Intravenous diazepam for facilitating relaxation for desensitization. *Journal of Behavior Therapy and Experimental Psychiatry*. 3(1):39-41, 1972.

Intravenous diazepam was found to be a safe, convenient agent for producing relaxation in two subjects unable to relax themselves. It was used for desensitization in two subjects and made it possible for self-relaxation to be induced subsequently. 17 references. (Author abstract)

**121406** Kellner, Robert. Department of Psychiatry, University of New Mexico, Albuquerque, NM Part 2. *Improvement criteria in drug trials with neurotic patients*. *Psychological Medicine* (London). 2(1):73-80, 1972.

Based on the available research evidence, several rating and self-rating methods are recommended which appear to be suitable for the mea-



surement of changes in distress in drug trials with neurotic patients. The Lipman scale, the symptom rating test and the multiple affective check list have repeatedly discriminated effectively between psychotropic drugs and placebos, and were found to be as sensitive or more sensitive than other improvement criteria, or the scale had extensive tests of validity and reliability, and the findings suggested that it measured changes in neurotic distress. 177 references. (Author abstract modified)

**121596** Mader, R.; Schubert, H. Psychiatrisch-neurologische Universitätsklinik, Spitalgasse 23, A-1097, Vienna 9, Austria /An observation of oxazepam dependency./ Beobachtung einer Oxazepam-Abhängigkeit. Wiener Medizinische Wochenschrift (Wien). 122(14):194-196, 1972.

A case is presented of a patient undergoing treatment with oxazepam (7-chlor-1,3-dihydro-3-hydroxy-5-phenyl-2H-1,4-benzodiazepin-2-on) for anxiety neurosis who developed an addiction to the drug. The drug had initially allayed the symptoms manifested by the patient, and she was given a dosage of 45mg. This was increased subsequently to 120mg per day. When the drug was discontinued after two years of continuous treatment, the anxiety neurosis flared up again and was accompanied by all the classical symptoms of addiction. It is important to control the administration of tranquilizers so as to avoid dependency. 6 references.

**121597** Radmayr, E. FA für Neurologie und Psychiatrie, Bahnhofplatz, A-6850 Dornbirn, Austria /Comparative study of parenteral doxepin and diazepam./ Vergleichende Untersuchung mit Doxepin und Diazepam parenteral. Wiener Medizinische Wochenschrift (Wien). 122(23):336-339, 1972.

The therapeutic effects of doxepin and diazepam were compared in a clinical study of 60 patients with anxiety symptoms who were selected randomly for treatment with those drugs. Doxepin was administered to one treatment group in a 12.5mg dose on the first day and in 25mg doses on days 2-6 and diazepam, to another group in a dose of 2.5mg on the first day and 5mg on days 2-6. Each group consisted of 30 patients. The results were evaluated by means of the Hamilton Anxiety Rating Scale and a comprehensive psychiatric evaluation. In the doxepin group, there was a marked improvement in 87% of the

patients and a moderate improvement in 13%. In the diazepam group, a marked improvement was evident in 37%, moderate improvement in 60%, and slight improvement in 3%. The number of side-effects due to doxepin was 16, and those due to diazepam, 77. The most immediate complaints following treatment were increased respiratory rate, tachycardia, and dryness of mouth. In no case were the side-effects severe enough to warrant cessation of drug administration. Topical tolerance was significantly better with diazepam than with doxepin. Doxepin, however, was superior than with doxepin. Doxepin, however, was superior with respect to amelioration of anxiety.

**121599** Volk, Walter Tunzhofer Strasse 14-16, Bürgerhospital, Psychiatrische Klinik, 7 Stuttgart 1, Germany /A double-blind investigation of a new soporific drug for use with depressive patients./ Doppelblinduntersuchung mit einem neuen Schlafmittel bei depressiven Patienten. Medizinische Welt (Stuttgart). 23(11):388-390, 1972.

A new soporific drug consisting of 250mg of methaqualone and 25mg of promazine (per capsule) was tested in 30 patients, 17 with endogenous depression, 6 with neurotic depression, and 7 with schizophrenia who exhibited depressive symptoms at the time of the study. The tests were conducted on a double-blind and crossover experimental design, each patient receiving either drug or placebo for four consecutive nights and reversing the treatment for the ensuing four nights. All other medication was withheld for three hours prior to the nightly administration of the test drug. Doses of 1-2 capsules were administered to each patient nightly, with an additional capsule (of either drug or placebo) given at the request of the patient. The dosage thus resulted in an average of 1.99 and 2.45 capsules, respectively, for drug and placebo, as required. With the drug, 93% of the patients slept well and 6.7% slept badly. With placebo, 65% slept well, 29.4% slept badly, and 51.1% were unable to sleep. There were no significant differences between either the dream contents or morning fatigue following medication of drug and placebo. 25 references.

**121600** Pernhaupt, G. Johann-Strauss-Gasse 32, A-1040, Vienna 4, Austria /Oxazepam in the treatment of neurotic disturbances as well as in the withdrawal management of alcoholics and drug addicts./ Oxazepam in der Behandlung von neu-

rotischen Störungen sowie in der ambulanten Entziehungsbehandlung bei Alkoholikern und Polytoxikomanen. Wiener Medizinische Wochenschrift (Wien). 122(16):233-235, 1972.

The effect of oxazepam (Anxiolit) was tested in 81 neurotic patients under treatment for intervals varying from several days to several weeks. The average dosage was 3-4 10mg pills per day, and in specific cases, higher doses. No untoward effects were observed. Oxazepam exhibited its best effects as a supplementary medication in the course of psychotherapy in various neurotic disturbances and in the control of alcoholism. The correction of vegetative abnormalities and promotion of somnolence are its most prominent properties. As with other tranquilizers, oxazepam has an initial effect of marked fatigue, which must be endured before an amelioration of the symptoms is evident. It has also exhibited a slightly addictive tendency. The advantages of oxazepam in the management of ambulatory addicts, who otherwise frequently require hospitalization, are its efficacy and the possibility of combining it with other medication with relative safety. (Author abstract modified).

122082 Macek, Z.; Hoch, B. Neurologická klinika lékařské fakulty hygienické, Karlova Univerzita, Prague, Czechoslovakia /Experience with Prothiaden in neurology./ Zkušenosti s prothiadenem v neurologii. Československá Neurologie (Praha). 35(3):162-166, 1972.

Prothiaden Spofa, 11-(3-dimethylaminopropylidene)-6,11-dihydrodibenzo (b,e) thiepin, which can be considered a sulfur isoester of aminotriptyline or a higher homologue of prothixen, was administered to 105 patients daily in doses from 50 to 75mg. Seventy five were ambulatory neurotics of the erethistic type with clinical symptoms of anxiety, inner tension, and depression; 20 were hospitalized patients with severe organic impairments. This latter group reacted justifiably with severe anxiety, insomnia, depression or fear of the future, surgery, or a painful diagnostic procedure. In addition a double-blind experiment was performed with neurotics designed to compare Prothiaden with amitriptyline. In 72 out of the 75 patients treated, anxiety, inner tension, fear and expectation of disaster and tragedy were alleviated almost instantly. Within a few days this erethistic syndrome disappeared almost completely or no longer bothered the patient. Insomnia treated simultaneously with hypnotics im-

proved. Side-effects were negligible (drowsiness). Also the 20 severely organically ill patients calmed down rather fast and began responding to simple rational psychotherapy, accepted their situation, and lost their hitherto unmanageable fear. The effect on six patients treated for constant severe pain was excellent. The comparison test disclosed that Prothiaden and amitriptyline were about equally effective. 25 references.

122663 Quitkin, Frederic M.; Rifkin, Arthur; Kaplan, Joel; Klein, Donald F. Hillside Hospital, 75-59 263rd Street, Glen Oaks, NY 11004 Phobic anxiety syndrome complicated by drug dependence and addiction. Archives of General Psychiatry. 27(2):159-162, 1972.

The evidence of the efficacy of antidepressants in the treatment of the phobic anxiety syndrome complicated by drug dependence and addiction is reviewed. This syndrome, characterized by panic attacks, subsequent development of anticipatory dread and consequent emergence of phobias, is seen most often in the patient with evidence of having been a fearful dependent child with a great deal of separation anxiety and the patient with some type of endocrine imbalance. A malignant complication of this syndrome is the abuse of sedatives and alcohol. This form of drug abuse is an incorrect attempt at self-medication whereas proper psychopharmacologic treatment with imipramine is enormously helpful. The clinical courses of two groups of patients followed from six months to three years are compared. The patients on imipramine did well and did not return to drug or alcohol abuse, but those not maintained on imipramine tended to return to drug abuse, were rehospitalized, and responded poorly to electroconvulsive therapy and phenothiazines. 7 references. (Author abstract)

123885 Stotsky, Bernard A.; Borozne, Joseph. Boston State College, Boston, MA Butisol sodium vs. librium among geriatric and younger outpatients and nursing home patients. Diseases of the Nervous System. 33(4):254-267, 1972.

The effectiveness of the sedative, tranquilizing activity of butabarbital sodium with chlor-diazepoxide was evaluated for both younger and geriatric patients and for outpatients and residents in nursing homes who manifested psychoneurotic and psychophysiologic symptoms which required psychoactive medication. In a four week double-blind crossover 61 patients completed the study,

31 nursing home patients and 30 outpatients. They were rated prior to treatment, after two weeks, just before crossover, and at the end of four weeks of treatment. The results demonstrated the superior efficacy of butabarbital sodium at modest dose levels for the first two weeks for this type of patient. For the last two weeks neither medication was superior. 6 references. (Author abstract modified)

**123933** Rickels, Karl; Hutchinson, James C.; Weise, Charles C.; Csanalosi, Irma; Chung, Hack R.; Case, Warren G. Department of Psychiatry, University of Pennsylvania, Philadelphia, PA Doxepin and amitriptyline-perphenazine in mixed anxious-depressed neurotic outpatients: a collaborative controlled study. *Psychopharmacologia* (Berlin). 23(4):305-318, 1972.

Doxepin was compared to the combination of amitriptyline-perphenazine in a double-blind controlled study conducted with 100 clinic, general practice, and private psychiatric practice outpatients diagnosed as suffering from a mixed anxiety-depressive reaction. The relatively few statistically significant differences found in the study indicated amitriptyline-perphenazine to be more effective than doxepin, general practice patients to improve the most and private psychiatric patients the least, and clinic patients to respond better to doxepin, while general practice and private psychiatric patients improved most with the drug combination. Amitriptyline-perphenazine was found to produce more improvement in high and doxepin in low depressed patients, and doxepin was observed to be more effective in lower than in higher social class patients. Patients on doxepin tended to report more side effects, but to drop out less frequently than patients on the drug combination. 10 references. (Author abstract)

**125968** Deykin, Eva Y.; DiMascio, Alberto. Psychiatric Research Social Work Collaborative Depression Study, Boston State Hospital, 591 Morton Street, Boston, MA 02124 Relationship of patient background characteristics to efficacy of pharmacotherapy in depression. *Journal of Nervous and Mental Disease*. 155(3):209-215, 1972.

As a part of a collaborative depression treatment study, pretreatment background characteristics (socioeconomic, demographic, and prior psychiatric status) of 163 depressed women were examined to determine whether they were related

to the degree of clinical response to amitriptyline. Further analyses were done to determine whether these characteristics could be of use in identifying those women who completed a four week course of pharmacotherapy from those who dropped out. It was found that clinically oriented background data related to present and past emotional illness were more highly associated with the degree of treatment response obtained. Sociodemographic characteristics, on the other hand, were more valuable for discriminating between patients who were willing to complete the four week course of antidepressant drug treatment and those who dropped out early. 15 references. (Author abstract modified)

**126998** Student, V.; Hynek, K.; Jirak, R. Psychiatricka klinika fakulty vseobecneho lekarstvi KU, Prague 2, Ke Karlovu 11, Czechoslovakia /Results of posedrine therapy with neuroses and psychopathies./ Vysledky lecbby posedrinem u neuroz a psychopatii. *Ceskoslovenska Psychiatrie* (Praha). 68(1):12-15, 1972.

Posedrine therapy (N-benzyl)-beta-chloropropionamid showed good results in the treatment of two thirds of 30 patients with neurotic troubles and psychopathic disorders of affectivity and behavior. Best results were obtained in patients with preponderant irritation, inflammable moods and aggressiveness either apparent or suppressed and transformed into other symptoms. States of anxiety were less responsive and depressions showed least improvement. Compared with neuleptile, the absence of side-effects may be positively estimated. (Author abstract)

**129465** Katz, Ronald L. 622 W. 168 St., New York, NY 10032 Drug therapy: sedatives and tranquilizers. *New England Journal of Medicine*. 286(14):757-760, 1972.

Problems associated with the use and abuse of sedatives and tranquilizers in the treatment of anxiety are discussed. Barbiturates are the most commonly used sedatives -- overdose poisonings and deaths have been reported. Meprobamate has been the most widely used antianxiety tranquilizer -- overdose toxicity is possible, but successful suicides are rare. Benzodiazepines are also popular antianxiety tranquilizers and their safety is high although side-reactions can occur. Comparative efficacy is difficult to assess. Sedatives and tranquilizers abuse and habituation occur. It is concluded that most stresses and strains of life



can and should be handled without drugs. 10 references.

**130068** Yamane, Hideo. Department of Neuropsychiatry, Kyoto Prefectural University of Medicine, Japan **A double-blind controlled trial of psychotropic drug oxazolam on neurotics, with special reference to its hypnotic effect.** *Clinical Psychiatry (Tokyo)*. 14(4):365-369, 1972.

The effects of oxazolam on neurosis are reported. The study was based on a double-blind test in which either oxazolam (60mg/day) or diazepam (6mg/day) was administered to 17 neurotic patients for two weeks, immediately followed by administration of the alternate drug for two weeks. No significant difference between the two drugs was observed. Oxazolam was considered to have a hypnotic effect similar to that of nitrazepam. The side-effects of oxazolam resembled chlordiazepoxide more closely than diazepam. 7 references.

**130475** Rickels, Karl; Gratch, Michael I; Gray, Bruce M.; Laquer, K. George; Parish, Lawrence C.; Rosenfeld, Howard; Whalen, Edward M. 203 Piersol Building, 3400 Spruce Street, Philadelphia, PA 19104 **Benzoctamine and chlordiazepoxide in anxious outpatients: a collaborative study.** *Diseases of the Nervous System*. 33(8):512-522, 1972.

A double-blind trial, conducted with 183 anxious neurotic general practice, private psychiatric practice, and symptomatic volunteer patients, resulted in relatively few significant differences in improvement among benzoctamine (60mg/day), chlordiazepoxide (60mg/day), and placebo. Failure to demonstrate marked differences between these active agents and placebo was felt to be partially related to the large number of side-effects, particularly of a sedative nature, reported by patients on both benzoctamine and, to a lesser extent, chlordiazepoxide. Significant differences in several outcome measures did indicate, however, that: 1) benzoctamine was most effective in anxious private psychiatric and least effective in anxious general practice patients; and 2) chlordiazepoxide occasionally appeared more efficacious than either of the other two agents, an observation which was particularly notable in general practice. 14 references. (Author abstract modified)

**131345** Starace, Conrad J. 1211 Gerard Avenue, Bronx, NY 10452 **Psychoactive medication and**

**concern: the urban physician's practical Rx for neuroses.** *Psychosomatics*. 13(4):251-254, 1972.

Twenty five psychoneurotic patients from a large, urban psychiatric practice were treated with thioridazine for two months. Three types of evaluations were employed before, during, and after treatment for the assessment of drug efficacy, namely, symptom severity ratings, global ratings of the progress of patients, and self-rating of anxiety by the patients (Taylor Manifest Anxiety Scale). Each parameter indicated that the patients improved substantially by the end of the study. Target symptoms showing the greatest improvement included anxiety, depressive mood, irritability, agitation, insomnia, and headache. Global progress was rated as good to very good in 85%. The results indicate that common sense psychotherapy and treatment with a drug such as thioridazine can be readily and effectively implemented by the family physician for the benefit of many patients with psychoneurotic disorders. 6 references. (Author abstract)

**131347** Reckless, John B. Department of Psychiatry, Duke University Medical Center, Durham, NC **Hysterical blepharospasm treated by psychotherapy and conditioning procedures in a group setting.** *Psychosomatics*. 13(4):263-264, 1972.

The treatment of two cases of severe intermittent eyelid closing (blepharospasm) was undertaken with therapeutic procedures utilizing deconditioning principles in a group setting. The two women, both in their sixties, had no physical explanation for their problem, and both had guilt as a major psychological symptom. They were treated successfully with tricyclic antidepressants and a nonphenothiazine tranquilizer in addition to supportive psychotherapy and a modified group therapy situation using behavior therapy techniques. It is suggested that this type of combination treatment may be applied to other types of psychosomatic illness. 7 references.

**132715** Peterfy, G.; Pinter, E.J. Department of Psychiatry, Reddy Memorial Hospital, Montreal, P.Q., Canada **Low dosage phenothiazine therapy: effective anxiolytic action without impairment to intellectual function.** *Current Therapeutic Research*. 14(9):590-598, 1972.

The action of two piperazine phenothiazines, prochlorperazine and trifluoperazine, was studied

in an effort to characterize their anxiolytic and sedative properties in anxious outpatients. Both drugs were administered in low dosages (prochlorperazine, 5mg.q.i.d.;trifluoperazine, 1mg.q.i.d.)and the effects of each were compared to placebo and to the association of both active drugs. Prochlorperazine, trifluoperazine, and the combination of the two provided comparable and significant anxiolytic action. As therapy continued, all the patients who received active medication performed progressively better on I.Q.and mental alertness tests, which were administered as a means of testing the degree of sedation or reduction of intellectual capacity associated with each drug. Only nondirectional changes were noted among the placebo patients. Because these drugs were effective anxiolytic agents at low dosages and did not interfere with mental function, it was concluded that their use is particularly beneficial in the maintenance care of ambulatory, working outpatients. 15 references. (Author abstract)

**132717** Carranza-Acevedo, Jose; Tovar-Acosta, Hector. National Medical Center, Instituto Mexicano del Seguro Social, Mexico City, Mexico  
Clinical evaluation of the efficacy of molindone and chlordiazepoxide in anxious outpatients. *Current Therapeutic Research*. 14(9):609-614, 1972.

Forty anxious psychoneurotic patients received molindone or chlordiazepoxide on a double-blind basis for a period of six weeks utilizing dosages of 5mg to 10mg per day of molindone, and 20mg to 40mg of chlordiazepoxide. Both groups improved, with no statistically significant differences, except after the second week of treatment. Side-effects were more common with molindone and led to discontinuation of therapy in at least eight patients (three dropouts included). When the group of five patients with side-effects produced by molindone was not considered for statistical analysis, the molindone treatment group showed a greater improvement than the chlordiazepoxide group, with no statistical difference. 11 references. (Author abstract)

**133083** Tesarova, O. Katedra psychiatrie Institutu pre dalsie vzdelavanie lekarov a farmaceutov, Bratislava, Czechoslovakia /On the problem of drug pathogenesis./ K problematike farmakogennej patomorfozy. *Ceskoslovenska Psychiatrie (Praha)*. 68(2):67-73, 1972.

Drug induced depression is discussed. Apomorphine administration caused neurotics and healthy individuals to present characteristic symptoms of depression which spontaneously disappeared when administration was ceased. This observation confirms the view that the depression was a direct effect of the drug. However, the drug itself was not solely responsible for the depressogenic effect because it manifested itself primarily in individuals with a latent predisposition for depression; this relationship was demonstrated by a highly significant correlation between the results of several psychodiagnostic tests (Beck test, M test, Z test) and the incidence of apomorphine depression or dysphoria in predisposed individuals. This relationship also holds true for depressions occurring during other forms of psychopharmacotherapy as confirmed by testing of 20 patients undergoing long-term neuroleptic therapy. 42 references.

**133321** Kedrowa, Stanislaw. Ak.Med.w Lublinie, Instytut Chorob Wewnetrznych, Klinika Kardiologiczna, ul.Hirszfelda 4 m.7, Lublin, Poland /Clinical evaluation of Sinequan./ Ocena kliniczna leku Sinequan. *Wiadomosci Lekarskie (Warszawa)*. 25(17):1595-1597, 1972.

The effect of Sinequan Pfizer was studied in 40 patients who suffered from neuroses, including 34 females and 6 males 20 to 67-years-old. Out of these, 24 cases were treated as inpatients, and 16 as outpatients. All neurotic disturbances disappeared after Sinequan therapy in 14 cases (35%), and marked improvement with disappearance of most complaints was obtained in 15 cases (37.5%). Slight improvement was observed in eight cases (20%). In three patients the drug was ineffective (7.5%). The tolerance of the drug was good. Side-effects included somnolence, mouth dryness, tachycardia, paresthesia of the extremities, and slight dyspnea in some cases. It was concluded that Sinequan is a valuable psychotropic drug. 5 references. (Journal abstract)

**134559** Muller, K. H.; Haarmann, K.; Neff, K. D-89 Augsburg, Blucherstr. 5, Germany /The effect of BC 105 on the depressed mood in migraine./ Wirkung von BC 105 auf depressive Verstimmung bei Migrane. *Therapeutische Umschau (Bern)*. 29(10):628-635, 1972.

The antimigrainous and antidepressive effect of BC 105 as compared to a placebo was studied on two groups of migraine patients selected at ran-

dom. No selection was made as regards the presence of symptoms of depression. Patients were required to comment on the frequency of depressive symptoms in migraine before and after administration of BC 105. By the use of Zung's self-rating depression scale it was seen that 91% of tested patients reported signs of depression in connection with migraine. Compared to the placebo, the preparation produced a remarkable improvement of the signs of depression as well as of the number and duration of attacks, and finally of the headache index (number of attacks multiplied by the intensity). The placebo was ineffective by every standard. The study did not shed any light on the problem of the frequency of signs of depression in migraine patients nor did it give any indication whether the antidepressive effect of the preparation should be interpreted as the indirect result of a reduction of headache or as a direct antidepressive property. Further studies with a greater number of patients as well as a psychiatric approach seem indicated. 22 references. (Author abstract modified)

#### 11 DRUG TRIALS IN MISCELLANEOUS DIAGNOSTIC GROUPS

119968 Boullin, David J.; O'Brien, Robert A. British Industrial Biological Research Association, Woodmansterne Road, Carshalton, Surrey, England Uptake and loss of 14C-dopamine by platelets from children with infantile autism. *Journal of Autism and Childhood Schizophrenia*. 2(1):67-74, 1972.

A study of uptake and loss of 14C-dopamine by platelets from 5 autistic children, 4 boys and 1 girl, 9 to 19 years of age, is reported and discussed. The results are compared with those obtained from normal, age matched controls. There were no significant differences in the uptake or loss of dopamine in the autistic group, but there was much greater variation in individual values. In one subject, dopamine uptake and loss were both abnormally high, which may be indicative of a body defect for dopamine in platelets of autistic children. As endogenous 14C-5 hydroxytryptamine and adenosine triphosphate were normal, the defect would not involve an abnormality in dopamine:adenosine triphosphate complex formation. It is suggested that these results highlight the need for more extensive investigation of brain biochemistry in autism. 13 references. (Journal abstract)

120839 Medical and Pharmaceutical Information Bureau. New York, NY MBD treatment evaluated. *Journal of Rehabilitation*. 38(3):14, 1972.

Drugs and their use in the treatment of hyperactive children were evaluated by Dr. J. G. Millichap of Northwestern University, at a recent New York Academy of Sciences Conference on minimal brain dysfunction. Methyl-phenidate is recommended as an adjunct to remedial education in the short-term treatment of children with minimal brain dysfunction (MBD), but long-term effects must await further research. For patients who failed to respond to central nervous system stimulants, Dr. Millichap recommended and evaluated as alternate agents the antianxiety and antipsychotic agents, chlorthalidoxepoxide, thioridazine and chlorpromazine, and an antidepressant, imipramine. An anticonvulsive, dihepylhydantoin, was found of value in the treatment of auditory perceptual deficits in 22 children with learning and behavior disorders. Barbituates usually exacerbate hyperactivity and are contraindicated. Treatment with medication is usually unnecessary after the age of 12, when any risk of experimentation or misuse of drugs might possibly become more significant. Pharmacotherapy must be supplemented with remedial education, parent counseling and psychotherapy where needed.

121301 Messiha, F.S.; Hsu, T.H.; Bianchine, J.R. Maryland Psychiatric Research Center, Pharmacology Research Unit, Department of Health and Mental Hygiene, Baltimore, MD Effects of peripheral aromatic L-amino acids decarboxylase inhibitor on L-(2-14C)-3,4-dihydroxyphenylalanine metabolism in man. *Biochemical Pharmacology* (Oxford). 21(15):2144-2147, 1972.

An investigation was undertaken in which the effect of pretreatments with MK-486, the L-isomer of MK-485(DL-alpha-hydrazine-alpha-methyl-beta-(3,4-dihydroxyphenyl) propionic acid) on the blood plasma and urinary excretion patterns of L-(2-14C)-dopa and its metabolites was studied in three Parkinsonian patients. The patients were subjected to the following treatments: first they were given 100mg of L-dopa; 1 week later they were pretreated with 100mg of MK-486 prior to receiving 100mg of L-dopa; they were later treated with 100mg of MK-486 three times daily for 7 days prior to receiving a single 100mg dose of L-dopa. It was found that the plasma dopa levels rose with increasing degrees of MK-486 pretreatment, while the plasma dopamine (DA) and homovanillic acid (HVA) levels



decreased with increasing degrees of MK-486 pretreatment. The urinary levels of DA and HVA were also significantly decreased by pretreatment with MK-486, as was the urinary excretion of dihydroxyphenylacetic acid (DOPAC). It is concluded that MK-486 is an effective inhibitor of dopa decarboxylase in man and that the L-dopa decarboxylation in the patients studied may have been predominantly an enzymatic rather than a nonenzymatic process. 15 references.

**121855** Ferrey, G.; Bouttier, D. Service de Neuro-Psychiatrie, Hopital Paul-Brousse, 14, avenue Paul-Vaillant-Couturier, 94 - Villejuif, France /The use of Pyracetam in subjective syndromes caused by cranial trauma observed in the psychiatric service of a general hospital./ Utilisation du Pyracetam dans les syndromes subjectifs des traumatismes du crane observes dans un service de psychiatrie d'hopital general. Therapeutique (Paris). 48(2):143-152, 1972.

Out of 70 patients with mental retardation treated with Pyracetam (UCB 6215), 48 were classified as suffering from benign cranial trauma. This diagnosis was applied to patients with a subjective syndrome of pain in the cranial area, following a cranial trauma which had occurred from 20 days to eight years previously. Those seen shortly after the trauma pointed to the specific area in the cranium that had been struck as the painful spot, whereas those with delayed reactions complained of pain in a diffuse area. Some of the other symptoms were: vertigo, imperfect vision, hearing difficulties and tactile problems, memory fixation and attention, asthenia, sleeplessness, and anxiety. Character problems were found among the delayed syndromes. Hypochondriasis was one of the symptoms, and depressive elements were also present. Sinistrosis, conversion hysteria, and accident proneness may occur among these subjects. Of the patients treated, 46 were evaluated: 25 with good results, 10 with moderate results and 11 without response. Even though the symptomatology is purely subjective, it is important to treat cerebral dysfunction as early as possible by means of chemotherapy to prevent further deterioration. This theory is supported by the obvious improvement seen in the cases with recent trauma. The tolerance was excellent.

**121895** Bugard, Pierre. Hopital Henri-Rouselle, Paris /The asthenic states and one of their modern treatments./ Les etats astheniques et l'un de leurs traitements modernes. Therapeutique (Paris). 48(4):297-302, 1972.

The use of a drug for the treatment of asthenia prompted the categorizing of such patients under the headings: discrete polypathology (involving minor chronic ailments); neurotic depression (authentic psychiatric diseases); and pseudoneuroses (as a response to some particular situation). Asthenic states, regardless of etiology, have in common: a decreased functional ability, the loss of the impetus and willingness to act, and a somatic state of catabolism which requires an antiasthenic therapy. Asthecrinol answers this purpose by providing deoxyribonucleic acid, adrenocortical extract, vitamin-B12, and the intrinsic factor. This medication was tested in 30 subjects of whom the majority were senescent and belonged to the first category (discrete pathology). In all, there were nine senescent subjects, seven with depressions, six with pseudoneuroses, and eight mixed cases. Asthecrinol was found to be refreshing, asthenic, slightly euphoria producing and capable of promoting anabolism. This was demonstrated by a gain in weight by two thirds of the population; stimulation of hematopoiesis in one half the cases; improvement in the sedimentation rate; and a moderate but significant effect in the urinary 17-ketosteroids, which is considered to be anabolic in nature. The dosage was administered at two ampules and two tablets (containing the intrinsic factor) b.i.d. for 16 days, and some subjects were given twice this dose for 10 days. 6 references.

**121896** Dry, Jean. Hopital Saint-Antoine, 184, rue du Fg Saint-Antoine, Paris-12e, France /States of agitation in the aged./ Les etats d'agitation chez le vieillard. Therapeutique (Paris). 48(4):309-312, 1972.

The etiology of agitation in old people may be of a neurotic or psychotic origin, may be traced back to the use of certain drugs or to metabolic dysfunctions. Agitation may also occur in vascular or cardiac disorders. As a first step in the treatment, the cause of the agitation must be found. Symptomatic treatment must be initiated to prevent exhaustion and other deleterious effects. The therapist should concentrate on calming the state of agitation, reestablishing the diurnal rhythm, and making certain that the patient is

adequately fed and hydrated. The use of tranquilizers must be confined to the anxiolytic type and controlled against cumulative effects. Meprobamate and diazepam are recommended. The neuroleptics are very effective when administered in small doses in states of mild agitation, when used in combination with tranquilizers. In cases of severe agitation accompanied by mental confusion, large doses of drugs with acute action are recommended (fluanisone, prochlorperazine, or butyrophenones). When periods of agitation are not evident, small doses of a thymoanaleptic may be used with good results. Timing of the drug administration is important. It must be borne in mind that older patients are apt to have serious accidents during the episodes of agitation and protective measures should be taken to prevent accidents.

**121928** no author. no address **Aid for angina: tranquilizers?** Medical World News. 13(22):54, 1972.

The effectiveness of diazepam (Valium) in relieving angina pectoris was tested in a small scale study. The aim of the study was to link a brief, stressful stimulus to blood catecholamine changes, and then to compare diazepam and placebo in alleviating the induced anxiety. Ten men with confirmed arteriosclerotic heart disease and angina pectoris, aged 48 to 60, participated in several stress tests during which blood samples were taken and after which questionnaires were administered to evaluate the frequency and severity of the angina during the period. At the final session a personality inventory was given which indicated significant anxiety in all the patients. While taking the placebo, seven men had increased norepinephrine levels in response to the stress test. With diazepam, the norepinephrine response was controlled in a majority of cases. It is concluded that diazepam is capable of dampening catecholamine response in anxious patients with angina pectoris following a psychological stimulus, and this is associated with a decrease in frequency and severity of the anginal state. It is postulated that other tranquilizers would probably have the same effect.

**122019** De Luca, K.; Masotti, R.E.; Partington, M.W. Kingston General Hospital, Kingston, Ontario, Canada **Altered calcium metabolism due to anticonvulsant drugs.** Developmental Medicine and Child Neurology (Tadworth, Surrey, England). 14(3):318-321, 1972.

The relationship between prolonged anticonvulsant medication and hypocalcemia was investigated. Three recent studies have demonstrated that phenacemide, diphenyl hydantoin, primidone and phenobarbitone produce a clinical picture resembling vitamin-D deficiency rickets. In this study, estimations of serum calcium, phosphate and alkaline phosphatase were made in 68 severely mentally retarded children. Significantly lower serum calcium and phosphate levels were found in the 33 children who were on anticonvulsant drugs than in the 35 who were not. X-rays of wrists, knees and elbows, read by a radiologist who did not know to which group the children belonged, also revealed more rachitic changes in the group on anticonvulsant drugs. This study shows that there is a relationship between prolonged anticonvulsant medication and hypocalcemia. The mechanism postulated is that these drugs induce hepatic enzymes which degrade vitamin-D. 4 references. (Author abstract)

**122083** Vladyka, V. Neurochirurgická klinika fakulty všeobecného lékařství, Karlova Univerzita, Prague, Czechoslovakia **Perspectives of parkinsonian therapy with L-dopa.** Vyhledky lecení parkinsonova syndromu L-dopou. Československá Neurologie (Praha). 35(3):150-154, 1972.

Experience gained by the treatment of 25 patients suffering from parkinsonism with L-dopa over a period of 6 months is reviewed. The drug has primarily a psychoactivating and antihypokinetic effect. Rigidity improves less markedly, tremor even less; sometimes it even gets worse temporarily. Other parkinsonian symptoms sometimes are altered more than by any other therapy. In a third of cases the therapeutic effect is unsatisfactory either because of an inadequate effect on parkinsonian symptoms or because of a predominance of side-effects, which are frequent but can be minimized by appropriate dosage or by a combination with other drugs; sometimes, however, they are alarming and force discontinuation of therapy. Therapy with L-dopa alone is seldom satisfactory; optimal effect is achieved by appropriate combination with other antiparkinsonian drugs or with surgery. The effect of the patient's age, of the duration of the disease, and of the intensity of symptoms is unresolved. L-dopa administration is contraindicated in cases of patients with cardiovascular diseases, with ulcers, with liver and kidney ailments, with blood diseases, or with psychotic and hyperkinetic symptoms. Simultaneous administration of vitamin B-6 must be

avoided and antihypertensives, ganglioplegics, sympathomimetics, psychotonics, and monoamine oxidase inhibitors must be administered with caution. Dosages must be gradual and periodically controlled. 18 references.

**122171** Rajput, A.H.; Kazi, K.H.; Rozdilsky, B. Division of Neurology, University of Saskatchewan College of Medicine, Saskatoon, Saskatchewan, Canada **Striatonigral degeneration response to levodopa therapy.** *Journal of the Neurological Sciences* (Amsterdam). 16(3):331-341, 1972.

Three cases of striatonigral degeneration are reported, two of which were treated with levodopa. None of the patients improved with anticholinergic or antihistamine drugs or with levodopa. The lack of response to the latter drug is attributed to a severe destruction of the striatum. Although it has not been possible to diagnose the condition in a living patient, it is suggested that patients who exhibit pure extrapyramidal system involvement characterized by rigidity, akinesia, and bulbar symptoms and who fail to improve following the administration of levodopa be subjected to a pneumoencephalogram. If this reveals dilatation of the lateral ventricles and possible atrophy of the head of the caudate nucleus, striatonigral degeneration should be strongly suspected. 19 references. (Author abstract modified)

**122172** Ringel, S.P.; Klawans, H.L., Jr. Department of Neurological Sciences, Rush-Presbyterian-St. Luke's Medical Center, Chicago, IL 60612 **Carbon monoxide-induced Parkinsonism.** *Journal of the Neurological Sciences* (Amsterdam). 16(3):245-251, 1972.

Carbon monoxide induced Parkinsonism is reviewed. Two distinct clinical pictures which follow carbon monoxide exposure and which have been labeled Parkinsonism are described. Most cases previously reported showed signs of diffuse neurological involvement with some Parkinsonian features, but the individual clinical manifestations did not resemble those of true Parkinsonism. A few reported cases did show a clinical course resembling that of progressive Parkinsonism following either acute or chronic exposure to carbon monoxide. A patient with severe and rapidly progressive Parkinsonism following recurrent exposure to carbon monoxide is described. The Parkinsonian state in this patient began almost 4 years after the last known severe exposure to car-

bon monoxide. The patient improved remarkably when given levodopa. 26 references. (Author abstract)

**122198** Sykes, Donald H.; Douglas, Virginia I.; Morgenstern, Gert. Department of Psychology, The Queen's University of Belfast, Belfast, Northern Ireland **The effect of methylphenidate (ritalin) on sustained attention in hyperactive children.** *Psychopharmacologia* (Berlin). 25(3):262-274, 1972.

Using a double-blind cross over design, the effect of methylphenidate on the performance of 23 hyperactive children on four tasks measuring different aspects of attention was investigated. While receiving ritalin, the hyperactive children showed a significant improvement in all aspects of their performance, which had, in comparison to a control group of normal children, been initially impaired. Furthermore, methylphenidate produced a significant improvement in the performance of those behaviors which had not initially been impaired. 18 references. (Author abstract)

**122371** Hare, Robert D. Department of Psychology, University of British Columbia, Vancouver 8, Canada **Psychopathy and physiological responses to adrenalin.** *Journal of Abnormal Psychology*. 79(2):138-147, 1972.

Physiological recordings were taken while 16 psychopaths (P), 16 nonpsychopaths (NP), and 16 mixed (M) Ss received an injection of saline, followed 15 minutes later by an injection of adrenalin. Tonic skin conductance of Group NP was generally greater than that of Groups M and P, a difference that increased throughout the course of the experiment. There were no significant group differences in tonic heart rate, respiration rate, blink rate, or electromyogram (EMG) activity. Both saline and adrenalin injections produced sharp increases in skin conductance, blink rate, digital vasoconstriction, and EMG activity, but these changes were more persistent with adrenalin. Adrenalin also produced large and prolonged increases in heart rate, while saline had virtually no effect on heart rate. With one exception, there were no significant differences between groups in responsivity. The exception involved electrodermal activity -- the increases in skin conductance following saline and adrenalin were smaller in Group P than they were in Group NP. Physiological responses given by each group were unrelated to scores on the Activity



Preference Questionnaire. The results therefore do not support earlier claims that psychopaths show extreme cardiac lability in response to adrenalin. On the other hand, they are consistent with the view that psychopaths are electrodermally hypoactive. 25 references. (Author abstract)

**122445** Cotzias, George C.; Lawrence, William H.; Papavasiliou, Paul S.; Duby, Simone E. Medical Research Center, Brookhaven National Laboratory, Upton, Long Island, NY Nicotinamide ineffective in parkinsonism. *New England Journal of Medicine*. 287(3):147, 1972.

Nicotinamide hydrochloride was administered daily in doses ranging from 850mg to 4.5g to patients with Parkinsonism who were receiving levodopa. The patients, who represented almost all stages of Parkinsonism, exhibited a wide variety of involuntary movements induced by levodopa given either alone or in combination with a peripheral decarboxylase inhibitor. The symptoms of Parkinsonism were unaffected by the nicotinamide and there was no change in the duration, distribution, or severity of the involuntary movements. Although the vitamin produced no toxic effects, one patient developed severe hypotension which disappeared after the nicotinamide was discontinued; there were no other side-effects. It is concluded that nicotinamide is ineffective in the treatment of levodopa dependent involuntary movements. 3 references.

**122704** Kazamatsuri, Hajime; Chien, Ching-piao; Cole, Jonathan O. Teikyo University School of Medicine, Tokyo Treatment of tardive dyskinesia: II. Short-term efficacy of dopamine-blocking agents haloperidol and thiopropazate. *Archives of General Psychiatry*. 27(1):100-103, 1972.

Based on the hypothesis that an enhanced dopaminergic activity in the basal ganglia may play a major role in tardive dyskinesia, the clinical efficacy of two dopamine blocking agents, haloperidol and thiopropazate dihydrochloride, for the short-term treatment of tardive dyskinesia was studied on 20 patients for four weeks. Both drugs were shown to have marked antidyskinetic effects in over half of the patients. Improvements of dyskinesia were not always accompanied by development of reversible extrapyramidal symptoms. These results, together with the findings obtained in a previous study, appear to support the above mentioned hypothesis, and suggest another

approach to the symptomatic control of tardive dyskinesia through neurochemical regulation, although the clinical practicability of these drug regimens over a longer period of time is not established and needs further investigation. 26 references. (Author abstract modified)

**122705** Paul, Gordon L.; Tobias, Lester L.; Holly, Beverly L. University of Illinois, Psychological Clinic, 51 East Gerty Drive, Champaign, IL 61820 Maintenance psychotropic drugs in the presence of active treatment programs: a 'triple-blind' withdrawal study with long-term mental patients. *Archives of General Psychiatry*. 27(1):106-115, 1972.

An evaluation of the effectiveness of continued low dosage maintenance chemotherapy as prescribed in practice in conjunction with active social treatment programs with long-term mental patients is presented. Fifty two hard core mental patients who had been receiving psychotropic drugs were assigned to one of four subgroups, equated on descriptive variables, level of functioning, and bizarre behavior. All patients then participated in one of two social - environmental treatment programs, with one subgroup in each program receiving drug continuation in different capsule form, and the other receiving abrupt withdrawal with placebo substitution. Relative and interactional effects of drug conditions were evaluated 17 weeks after drug changes with concomitant exposure to active treatment programs, without patients, treatment staff, or assessors being aware that a drug study was underway. Except in early stages of treatment, where drugs interfered with improvement, continued low dosage maintenance chemotherapy as prescribed in practice failed to produce direct effects or to contribute to responsiveness to the environmental programs. 99 references. (Author abstract modified)

**123886** Hollister, Leo E.; Prusmack, John J.; Lipscomb, Wendell. Veterans Administration Hospital, Palo Alto, CA 94304 Treatment of acute alcohol withdrawal with chlormethiazole (heminevrin). *Diseases of the Nervous System*. 33(4):247-250, 1972.

Twenty-nine patients with mild, uncomplicated alcohol withdrawal reactions treated with chlormethiazole were studied. Maximal daily doses ranged from 3.6 to 10.8gm, treatment being limited to a maximum duration of seven days. Response

to treatment was generally favorable, with rapid initial improvement in symptoms followed by a slower progression towards normal. As compared with expectations based on their clinical condition at entry or their response to other forms of drug therapy, these patients responded at least equally well, if not slightly better, to chlormethiazole. No complications of note were encountered. Chlormethiazole is worth including in a controlled comparison with other drugs for managing alcohol withdrawal states. 5 references. (Author abstract)

**124068** Burns, C.R. no address /The use of Antabuse as a deterrent to alcoholism./ Alcoholism. New Zealand Medical Journal (Dunedin, New Zealand). 75(481):387, 1972.

A letter to the editor is presented in which a previous letter by Dr.R.A.McDowell is generally agreed with; exception being taken to McDowell's attitude toward the use of Antabuse. It is felt that the Alcoholics Anonymous program is of great importance to the alcoholic in maintaining total abstinence. However, the resolve in the morning not to take a drink can be beset by emotions later in the day. It is suggested that a half tab of Antabuse every day along with the resolve not to drink will go much further to insure that no drinking will occur. 1 references.

**125367** Chase, Thomas N. Unit on Neurology and Section on Experimental Therapeutics, NIMH, Bethesda, MD 20014 Biochemical and pharmacologic studies of Huntington's chorea. (Unpublished paper). Bethesda, MD NIMH, 1972, 20p.

The biochemical and pharmacologic studies reported here fail to support a role for serotonin in the pathogenesis of Huntington's chorea. The reliability of cerebrospinal fluid (CSF) concentrations of homovanillic acid (HVA) as an index of central dopamine metabolism is supported by the findings of diminished levels of this dopamine metabolite in the CSF of patients with Parkinson's disease. A substantial diminution in the CSF content of HVA also occurs in patients with Huntington's chorea. In patients with Huntington's disease, the rate of HVA rise during probenecid treatment was about half that of control subjects. No abnormality in the probenecid induced accumulation of 5-hydroxyindoleacetic acid (5HIAA) was observed in the Huntington's chorea patients. Five patients with Huntington's disease received L-tryptophan at maximum doses.

No significant alteration in the severity of choreatic movements was observed. Moreover, the addition of pyridoxine or of peripheral decarboxylase inhibitor, L-alpha-methyldopahydrazine (MK-486) failed to modify the clinical response to L-tryptophan. In patients receiving L-tryptophan alone, mean CSF levels of 5HIAA increased 2.4fold. The CSF content of HVA was not significantly affected. L-Dopa, given alone or with D,L-alpha-methyldopahydrazine (MK 485), led to an unmistakable increase in the severity of choreatic movements in five of the six Huntington's chorea patients studied. 35 references.

**127184** Stotsky, Bernard A.; Cole, Jonathan O.; Lu, Leigh-Min; Sniffin, Celia M. Boston State University, Boston, MA A controlled study of the efficacy of pentylenetetrazol (Metrazol) with hard-core hospitalized psychogeriatric patients. American Journal of Psychiatry. 129(4):387-391, 1972.

An 18 week double-blind crossover study of 61 hard core geriatric patients with organic brain syndrome compared the efficacy of pentylenetetrazol (Metrazol) with placebo, using a dosage level of 600mg per day. Five rating instruments were administered at the beginning, the crossover point, and the end of the study. The results demonstrated no superiority of Metrazol over placebo. Women improved more than men under both conditions. The sequence of administration of medications was not significant. Side-effects were noted in only 15% of patients on Metrazol and 8% on placebo. 29 references. (Journal abstract)

**127389** Crane, George E. Spring Grove State Hospital, Baltimore, MD 21228 Prevention and management of tardive dyskinesia. American Journal of Psychiatry. 129(4):466-467, 1972.

Because no adequate therapy is available, the prevention of tardive dyskinesia is of great importance. The disorder may be prevented by periodic evaluations of the neurologic status of patients on long-term drug treatment, followed by reducing the drug dosage or discontinuing administration. Withdrawing neuroleptics, particularly in patients with pseudoparkinsonism, may uncover latent dyskinesia. For patient already exhibiting this disorder, the use of small doses of neuroleptics may be safe, provided changes in neurological symptoms are monitored carefully. 6 references. (Journal abstract)

**128336** Fahn, Stanley. Dept. of Neurology, University of Pennsylvania School of Medicine, Philadelphia, PA 19104 **Treatment of choreic movements with perphenazine.** *Diseases of the Nervous System.* 33(10):653-658, 1972.

The efficacy of perphenazine in the treatment of chorea of several types was evaluated in 27 patients. Twelve patients participated in a double-blind crossover study with a highly significant correlation in favor of perphenazine over placebo. Of the entire group of 27 patients, 17 had Huntington's disease; three, nuchal choreadystonia; two, oral lingual - buccal dyskinesia of unknown etiology; one, postencephalitic chorea; two, vascular hemichorea; and two, unknown etiology. Nineteen of the 27 patients (70%) including 13 of the 17 with Huntington's disease improved significantly. In eight patients of the entire group of 27 (30%) there was a dramatic response, with virtual cessation of all abnormal movements. 25 references. (Author abstract)

**128341** Ayd, Frank J., Jr. International Drug Therapy Newsletter, 912 West Lake Ave., Baltimore, MD 21210 **A clinical evaluation of the hypnotic efficacy and safety of mebutamate.** *Diseases of the Nervous System.* 33(10):684-692, 1972.

A three phase, four year clinical evaluation of the hypnotic efficacy and safety of mebutamate was made with 180 psychiatric outpatients. Duration of administration ranged from four to 42 months. Mebutamate (300-600mg) produces sound, restful sleep for an average of seven hours without significant hangover. Doses of 900mg seem no more effective than 600mg. Long-term administration seldom led to tolerance, and even abrupt withdrawal caused no apparent withdrawal symptoms. In no patient was there any evidence of true tolerance for or habituation to mebutamate. Two unsuccessful suicidal attempts with this drug are recorded. Side-effects were infrequent, subjective, and benign: dizziness, headache, hangover, and dryness of the mouth; similar side-effects occurred in a placebo group. No adverse interactions between mebutamate and a multitude of other drugs taken by the patients were detected. This drug was well tolerated, even by patients with moderately severe physical disorders. It was especially well tolerated by geriatric patients who often are intolerant of hypnotic drugs. 3 references. (Author abstract modified)

**128875** Arnold, L. Eugene; Strobl, Donald; Weisenberg, Allen. 410 W. Tenth Ave., Columbus, OH 43210 **Hyperkinetic adult: study of the 'paradoxical' amphetamine response.** *Journal of the American Medical Association.* 222(6):693-694, 1972.

A form of the hyperkinetic syndrome, assumed to be a juvenile condition, has been found in an adult with a previously undiagnosed condition. The pathognomonic paradoxical calming of the hyperkinetic by amphetamine was shown in a 22-year-old man and further elucidated by quantitative self-estimation of mood following double-blind administrations of dextroamphetamine sulfate and placebo. Compared to his response to placebo, he not only showed externally visible calming and depression, but also subjectively reported decreased anxiety, increased depression, and increased concentration, with no change in self-esteem. 5 references. (Author abstract)

**129088** Arikawa, Katsuyoshi; Naganuma, Rokuichi; Ohshima, Masachika. Department of Neuropsychiatry, Kurume University, Japan **The change of behavior pattern of alcohol addicts treated with cyanamide double medication - observations by their families.** *Clinical Psychiatry (Tokyo).* 14(5):447-455, 1972.

A report on the change in behavior patterns of alcohol addicts treated with cyanamide double medication is presented, based on questionnaires given to wives, mothers, daughters, and sisters of 52 alcohol addicts. Results show that 78.8% of the patients were achieving abstinence or successfully cutting back the amount of drinking with an accompanying decrease or disappearance of family conflicts, due to a change in patients' behavior at home. Altogether 78.8% of the patients achieved an improvement in relation to friends and colleagues and an increasing interest in hobbies and home type activities. 21 references.

**129494** Greenberg, L. M.; Deem, M. A.; McMahon, S. Department of Pediatrics, University of California School of Medicine, Davis, CA 95616 **Effects of dextroamphetamine, chlorpromazine, and hydroxyzine on behavior and performance in hyperactive children.** *American Journal of Psychiatry.* 129(5):532-539, 1972.

Sixty one hyperactive school age boys were randomly assigned to chlorpromazine, dextroamphetamine, hydroxyzine, or placebo



groups in an 8-week, double-blind study of the effects of these preparations on behavior and performance in these type of children. Chlorpromazine and dextroamphetamine, virtually equally effective, were significantly more effective than hydroxyzine in modifying hyperactivity. Dextroamphetamine produced frequent side-effects, but chlorpromazine did not. It is suggested that final selection must depend upon clinical acumen and perhaps a trial of medication, since response to the latter two drugs is highly individualized. 26 references. (Author abstract)

**130018** Postma, J. U. Valerius Clinic, Amsterdam, The Netherlands **Haloperidol in Dopa-induced choreo-athetosis.** *Psychiatry, Neurologia, Neurochirurgia* (Amsterdam). 75(1):69-71, 1972.

The effects of haloperidol on Dopa-induced choreo - athetosis are reported. It is stressed that although a Parkinson syndrome has so far always been regarded as a contraindication to haloperidol medication, and while it is known that haloperidol can lead to iatrogenic Parkinsonism, none of the patients we have treated showed any aggravation of Parkinson symptoms. This is understandable if we bear in mind that in these cases haloperidol was used to protect against an excess of dopamine. As the L-Dopa dosage increases, the competition effect noted in animal experiments can become apparent to some extent: larger doses of L-Dopa necessitate larger doses of haloperidol. Haloperidol has an antiemetic effect as well, and vomiting as a side effect in some cases was controlled by the same drug. 9 references. (Author abstract modified)

**130020** Van Manen, J. Department of Neurosurgery, State University, Groningen, The Netherlands **Treatment of Parkinson's disease with amantadine (Symmetrel).** *Psychiatry, Neurologia, Neurochirurgia* (Amsterdam). 75(1):49-59, 1972.

The effectiveness of the treatment of Parkinson's disease with amantadine hydrochloride (Synmetrel) is reported. Satisfactory results were obtained in 36 patients. After 6 weeks of treatment, 20 closely watched patients showed significant improvement in rigidity, tremor, walking, hand movements and disturbances in writing, which persisted for 6-14 months in half these cases. Side-effects were rarely of a more serious character, but in seven out of 36 cases they necessitated discontinuation of treatment, after which these symptoms always disappeared

rapidly. The trial was carried out in an outpatient setting. The control of the therapy presented far less difficulties than that of L-Dopa therapy. In addition to the effect of anticholinergic agents, a distinct improvement was reached. 26 references. (Author abstract modified)

**130067** Hogari, Nario. Nihon University, Japan **Anticonvulsants.** *The Japanese Journal of Nursing* (Tokyo). 36(5):656-659, 1972.

A general discussion of anticonvulsants is presented. Topics include: the history of development of anticonvulsants; the significance of electroencephalogram in diagnosis of epilepsy; the types of anticonvulsants such as phenobarbital derivatives, hydantoin derivatives, and acetyl urea derivatives; Lennox's classification of epilepsy; application of anticonvulsants and type of epilepsy; side-effects of anticonvulsants.

**130546** Palestine, Milton L. Metropolitan State Hospital, 11400 Norfolk Blvd., Norwalk, CA 90650 **Comparative study of two antipsychotic drugs in a state hospital.** *Diseases of the Nervous System*. 33(6):395-402, 1972.

Fifty five patients in a state hospital participated in a study to compare the therapeutic effects of a new phenothiazine derivative, mesoridazine, with those produced by chlorpromazine. Twenty nine patients were treated with mesoridazine and 26 with chlorpromazine. The relative effects of the two agents were judged by evaluation of patients' psychological change with emphasis on target symptom ratings, a global estimate of drug effect, occurrence of side-effects, and various laboratory tests. The results of treatment showed that mesoridazine and chlorpromazine are both safe and effective antipsychotic agents. The effects of the two drugs could be differentiated, however, in that more severely ill patients responded significantly better to treatment with mesoridazine than chlorpromazine. This difference in effect appeared in an analysis of significant regions for the aggregate Brief Psychiatric Rating Scale (BPRS) ratings, six BPRS symptoms, and two BPRS factors. The symptoms most responsive to mesoridazine suggest that it is particularly effective in the treatment of thought disorders commonly encountered in schizophrenia. 10 references. (Author abstract modified)

**130668** Lehmann, H. E.; Ban, T. A.; Saxena, B. M. Douglas Hospital, 6875 Lasalle Blvd., Verdun, Ontario, Canada Nicotinic acid, thioridazine, fluoxymesterone and their combinations in hospitalized geriatric patients: a systematic clinical study. *Canadian Psychiatric Association Journal* (Ottawa). 17(4):315-320, 1972.

A comprehensive clinical study with 120 geriatric psychiatric inpatients was designed to retest singly and to observe for the first time in combination the efficacy of three psychoactive medications, thioridazine, nicotinic acid, and fluoxymesterone. Of the single drugs and drug combinations, the fluoxymesterone and thioridazine combination was found to have the greatest overall therapeutic effect in the treatment of chronically hospitalized geriatric patients. The fluoxymesterone and nicotinic acid combination also produced only beneficial therapeutic effects, but the frequency of side effects was much greater. A drug used alone or placebo administration was therapeutically inadequate. 7 references. (Author abstract modified)

**131003** Campbell, Magda; Fish, Barbara; Korein, Julius; Shapiro, Theodore; Collins, Patrick; Koh, Celedonia. New York University Medical Center, 550 First Ave., New York, NY 10016 Lithium and chlorpromazine: a controlled crossover study of hyperactive severely disturbed young children. *Journal of Autism and Childhood Schizophrenia*. 2(3):234-263, 1972.

A controlled crossover study of lithium and chlorpromazine involving 10 severely disturbed children, 3-6-years-old, of which six were schizophrenic and one autistic, is reported. Patients were matched for motor activity (hyperactivity and hypoactivity) and prognosis. More symptoms diminished on chlorpromazine than on lithium. However, improvements were only slight on both, except on one child whose autoaggressiveness and explosiveness practically ceased on lithium (nonblind evaluations). Blind ratings indicated no statistically significant difference between the two drugs as well as absence of statistically significant change from baseline to treatment with either. Lithium diminished the severity of individual symptoms, though not statistically significant, such as explosiveness, hyperactivity, aggressiveness, and psychotic speech. Its effect in adult schizophrenia is compared to responses of schizophrenic children. Also discussed is the relationship of EEG to clinical

improvement and toxicity, and effect of lithium on hyperactivity and aggressiveness. It is suggested that lithium may prove of some value in treatment of severe psychiatric disorders in childhood involving aggressiveness, explosive affect and hyperactivity. 54 references. (Author abstract)

**131948** Schwab, Robert S.; Poskanzer, David C.; England, Albert C., Jr.; Young, Robert R. Diseases; Poskanzer, Department of Neurology, Massachusetts General Hospital, Boston, MA 02114 Amantadine in Parkinson's disease: review of more than two years' experience. *Journal of the American Medical Association*. 222(7):792-795, 1972.

Four hundred thirty patients with Parkinsonism were treated with amantadine hydrochloride alone or in conjunction with other antiparkinsonism medications over a period of 2.5 years. Of 351 patients who took 200mg daily for 60 days, 64% showed a favorable response to the drug at 60 days and thereafter. Of those patients who received amantadine and levodopa, 79% responded favorably, as compared with 48% in the group who did not receive levodopa. In one half of the patients treated, a decline in the therapeutic efficacy of amantadine was observed between 30 and 60 days. Few side-effects were noted even after long periods of administration, and laboratory studies disclosed no consistent significant abnormalities. 10 references. (Author abstract)

**132713** Hindle, Thomas H., III. 8032 Hummingbird Circle, La Palma, CA 90620 Comparison of carisoprodol, butabarbital, and placebo in treatment of the low back syndrome. *California Medicine*. 117(2):7-11, 1972.

A double-blind study was carried out to determine the effectiveness of a muscle relaxant, carisoprodol, in the treatment of the low back syndrome, and to test whether this drug would produce any greater effect than an active sedative control. Forty eight Mexican migrant farm laborers with acute lumbar strain and spasm were given either carisoprodol 350mg, butabarbital 15mg, or placebo, four times daily for four days, and then were rated on pertinent symptoms, the degree of limitation of motion (by an objective finger to floor test), and overall improvement. In the 43 patients who could be statistically analyzed, carisoprodol was shown to be significantly more effective than butabarbital or placebo

in producing improvement of all factors rated. This result suggests that the effects of carisoprodol are not due solely to sedative action but are also related to its muscle relaxant activity. 8 references. (Author abstract)

**132752** Gayral, L.; Escande, M.; Fournie, H.; Perretti, A. Clinique de Psychiatrie, Universite Paul-Sabatier, U.E.R.de Medecine, Toulouse-Purpan, Toulouse, France /An attempt to administer neuroleptics with a prolonged effect in the treatment of acute psychotic states./ Essai d'application des neuroleptiques a effet prolonge au traitement des etats psychotiques aigus. *Annales Medico-psychologiques* (Paris). 1(3):381-394, 1972.

The application of unusual doses of neuroleptics with prolonged effects is described in the case of acute and subacute psychotic types. The study comprises 16 cases and the drugs used were fluphenazine enanthate, fluphenazine decanoate, pipothiazine undecylate, and pipothiazine palmitate. The dosages were not uniform, but were generally either given in a single dose by an injection of 0.075-0.100gm, or injections at regular intervals with an increasing number of days between injections. The treatment is effective in terms of symptomatic relief in the acute phenomena, but it is recommended that, for continued medication, the usual dosage levels be instituted. In this study, 14 out of 16 cases responded by a reduction of delirium and excitation during the acute phase. In four cases, an akinetic syndrome was manifested toward the twenty fifth day of treatment; this was of short duration without complications. It is recommended that this treatment be used in refractory cases.

**132753** Boucharlat, J.; Salomon, C.; Maitre, A.; Pelat, J.; Wolf, R. no address /Clinical study of arginine aspartate in secondary sexual impotencies./ Etude clinique de l'aspartate d'arginine dans les impuissances sexuelles secondaires. *Annales Medico Psychologiques* (Paris). 1(3):394-400, 1972.

The systematic treatment with arginine aspartate (Sargenor) for total or partial secondary sexual impotence in 58 patients is analyzed. The study was conducted under double-blind conditions; the drug was used, at the start of the study, in its usual commercial form, in 10ml ampoules titrated at 10%. A daily dose of 6 ampoules was administered for from 3 to 6 weeks, followed by a maintenance dose of 2 to 3 ampoules for 4 to 8

weeks. Favorable results with Sargenor were obtained in from 55 to 68%, whereas, with placebos, the results were favorable in 36 to 50% of the population, demonstrating the effect of suggestion in such cases. In 24% of the cases, a definite positive effect was confirmed by the resumption (in 1 to 3 weeks) of sexual activity. In 37% of the cases, an immediate improvement was observed but this was of a transitory nature and medication had to be continued for several months. In 16%, the resumption of treatment was of no avail. No result was observed in 22% of the cases. 4 references.

**132772** Spilimbergo, Pier Giuseppe. Ospedale Neuropsichiatrico Provinciale di Treviso, Italy /Experimental psychoclinical treatment of the severely mentally retarded with arginine-N-acetyl aspartate (AAA)./ Sperimentazione psicoclinica dell'N-acetil-asparaginato di arginina (Drusil) in soggetti con grave insufficienza mentale. *Rassegna di Studi Psichiatrici* (Siena, Italy). 61(2):195-202, 1972.

Twenty mentally retarded children aged 7 to 13 were treated with arginine-N-acetyl aspartate (AAA). Their behavioral disturbances were detectable by EEG's. The following behaviors were observed: effect on psychomotor instability, capacity for interpersonal contact, attention span, and initiative and memory. Also measured were weight, blood pressure, sleep, appetite, and blood analyses. The drug had a decisive psychotonic effect on about 50% of the patients, a discernible improvement in 35% of the patients, and no improvement in 15%. A degree of improvement was noted in the capacity for interpersonal contact and in the control of instinctive impulses; memory, attention span and initiative improved noticeably i.e., by 70, 60, and 52% respectively. Psychomotor instability is controlled by the drug only mildly (12.5%). No EEG changes were noted in epileptics who took the drug in addition to antiepileptic drugs. Tolerance of the drug was good. 10 references.

**132778** Ursillo, R.C.; McCulloch, J.A. Department of Pharmacology, Lakeside Laboratories, Milwaukee, WI The effect of elantrine, a new anti-Parkinsonism agent, on drug-induced tremor in mice. *Archives Internationales de Pharmacodynamie et de Therapie* (Ghent). 197(1):132-140, 1972.



The pharmacological actions of elantrine are compared to some well known antiparkinsonism drugs. Studies were carried out in ICR male mice in whom tremors were induced by oxotremorine, nicotine or harmine. Elantrine (5-methyl-11-(3-dimethylaminopropylidene)-5,6-dihydromorphanthridine) was found to be a potent inhibitor of oxotremorine tremor but an antagonism of the central effects can occur by mechanisms unrelated to central anticholinergic activity. The inhibition of tremor by elantrine cannot be regarded as specific for oxotremorine or for central cholinergic stimulants, since the tremor produced in mice by harmine was also inhibited. Since elantrine is effective against central cholinergic stimulants as well as harmine, its antitremor action may involve a mechanism different from that by which the typical anticholinergic antiparkinsonism drugs act. In contrast to atropine, trihexyphenidyl, procyclidine and benzotropine, elantrine has an extremely weak action on peripheral cholinergic receptors. It is suggested that elantrine would have useful clinical antiparkinsonism properties. 15 references.

**132808** Domzal, Teofan. Military Medical Academy of Warsaw, Postgraduate Training Institute, Neurological Clinic, Warsaw 60, Poland /The effect of diphenylhydantoin on the clinical manifestations and excretion of 5-hydroxyindoloacetic acid in Parkinson's Disease./ Wplyw dwufenylohydantoiny na obraz kliniczny i wydalanie kwasu 5-hydroksyindoloaceticznego w chorobie Parkinsona. Neurologia i Neurochirurgia Polska (Warszawa). 6(3):357-360, 1972.

The effects of diphenylhydantoin on 14 parkinsonians were studied. Four parameters were used to determine the patient's clinical condition: tremor, akinesia, muscle tone, and frame of mind. The same parameters were applied when treating the patients with diphenylhydantoin (DPH). The drug was administered to the 14 patients aged 38 to 65 years in a daily dose of 300 to 400mg. Before treatment and after 7 and 14 days of treatment, the daily urine levels of 5-hydroxyindoloacetic acid (5-HIAA) excretion were determined by Lecoq's method and Udenfriend's modified method. In 10 patients decreased muscle tone was observed. Tremor continued in 13 patients. Only six patients had an improved clinical state. Tremor ceased in three cases. Some mobility and mimicry, as well as an improvement in walking were observed in those three cases.

Eleven patients said they felt much better and more comfortable. They were in a better frame of mind. Diphenylhydantoin causes a rise in the serotonin level in the brain and increases the excretion of its metabolite, 5-HIAA. It also decreases the muscle tone. The initial level of 5-HIAA in the urine was not decreased. During treatment, the excretion of 5-HIAA was not raised, in contrast to epileptic patients who were treated with diphenylhydantoin, which may suggest metabolic disturbances in Parkinson's disease. 14 references.

**132869** Brown, J.H.; Moggey, D.E.; Shane, F.H. Department of Psychiatry, University of Manitoba, Winnipeg, Canada **Delirium tremens: a comparison of intravenous treatment with diazepam and chlordiazepoxide.** Scottish Medical Journal (Glasgow). 17(1):9-12, 1972.

In a clinical trial comparing diazepam and chlordiazepoxide in the treatment of delirium tremens in 18 alcoholics, the outstanding difference noted was that diazepam appeared to have a more rapid onset of action, enabling dosage to be adjusted more accurately. It is suggested that this difference, in conjunction with its greater anticonvulsant activity, renders diazepam preferable to chlordiazepoxide in the treatment of delirium tremens. Certain ethical and methodological problems peculiar to this non-blind comparison between an effective drug and one more recently introduced are considered. 5 references. (Author abstract)

**132919** Delomier, no address /A clinical study of Encephabol in geriatrics./ Etude clinique de l'Encephabol en gériatrie. Revue de Gerontologie (Paris). 1:69-71, 1972.

A clinical study of the efficacy of Encephabol (pyritinol hydrochloride) in geriatric therapy is described. Included in the 40 cases observed were 18 senile dementias or severe mental deterioration, 10 neurovascular syndromes, 1 multiple sclerosis, 1 Fontenelle syndrome, and 10 cases of neuropathology. The dosage was 300mg per day over a period of 3 weeks to 3 months; in some cases the dose was increased to 600mg. The results demonstrated improvement in some cases, particularly in the mental state, a better control of functions such as sleep, appetite, and continence, and in behavior. The tolerance was excellent and interruption of the medication was unnecessary in any case; there was no exacerbation due to this medication in any of the vascular diseases.

**132958** Asher, W.L.; Dietz, R.E. American Society of Bariatric Physicians, 333 West Hampden Avenue, Suite 307, Englewood, CO 80110 Effectiveness of weight reduction involving 'diet pills'. *Current Therapeutic Research*. 14(8):510-524, 1972.

Of 1409 patients treated for overweight by plans involving high protein, calorically unrestricted programs, and diet pills, 38% lost 20 pounds or more, and 10% lost 40 pounds or more. These findings compared with 24% and 5% respectively, for the Literature Group (1269 patients) treated by plans using no or minimal drugs, and calorically restricted programs. Of the Diet Pill Group 220 were hypertensive at start of treatment and 105 at the end of treatment. Thirty one at the start of treatment and 11 at the end of treatment had elevated diastolic blood pressures when less than five pounds were lost and patients received no thiazide or comparable diuretics or other hypotensive drugs. A double-blind study of 89 additional female patients showed that digitalis leaf, when administered with other diet pills, had no apparent effect on blood pressure, pulse, or the amount of weight lost. 20 references. (Author abstract)

**132986** Beteta, Edmundo. Departamento de Neurologia, Universidad Peruana Cayetano Heredia, Unidad Docente de Neurologia, Hospital Cayetano Heredia, Lima, Peru /Use of hydrochlorhydrate of amantadine in Parkinson's syndrome./ Utilizacion del Hidroclorhidrato de Amantadina en el Sindrome Parkinsoniano. *Revista de Neuro-Psiquiatria* (Lima). 35(1):70-74, 1972.

A 6-month clinical study of 21 parkinsonian patients was conducted to determine the therapeutic effects of amantadine and levo-dopa (l-dopa). Initially, amantadine was administered alone and then later in association with l-dopa for a period of six months. In 13 patients with rigidity, two showed full recovery; ten, significant improvement and one, mild improvement. In eight patients with tremor, one presented significant improvement and seven showed mild improvement. Three of these patients had a weak response to amantadine and did not improve later with the addition of l-dopa. Side-effects were not observed during the treatment period. Results indicate that amantadine is a useful antiparkinsonian drug and that it is effective when associated with l-dopa. 5 references. (Author abstract modified)

**133071** Walker, J.E.; Albers, J.W.; Tourtellotte, W.W.; Henderson, W.G.; Potvin, A.R.; Smith, A. Department of Neurology, University of Michigan Medical Center, Ann Arbor, MI 48104 A qualitative and quantitative evaluation of amantadine in the treatment of Parkinson's disease. *Journal of Chronic Diseases*. 25(3):149-182, 1972.

The efficacy of amantadine in the treatment of Parkinson's disease was evaluated in a double-blind study by comparing the functional capacity of 21 patients receiving 100mg amantadine twice daily for up to 12 weeks with that of 21 patients receiving placebos. The patients were 48 to 85 years old (mean 65 years). Qualitative measures of functional capacity were obtained through patients' impressions, neurologists' subjective impressions, and neurologists' evaluation sheets. Quantitative measures were obtained from the Simulated Activities of Daily Living Examination, the neuropsychological examination, and the clinical quantitative neurological examination. Sixty four percent of the patients on amantadine experienced subjective improvement compared to 21% on placebo. Quantitative measurement revealed a 29% average improvement in the simulated activities of daily living, 14% in tests of coordination, 11% for gait, and 3% for strength. The response to amantadine was not related to age, sex, or severity of disease, but those who responded had a significantly longer duration of illness. The benefit of amantadine appeared to be greater than that afforded by standard medications used prior to entry into the study. For the patient, the improvement in the accomplishment of daily living activities may be the most significant effect of amantadine treatment. 14 references.

**133137** Bukowczyk, Adam; Tomaszewski, Kazimierz; Juryga, Jan; Sidorowicz, Slawomir. Akademia Medyczna we Wroclawiu, Klinika Psychiatryczna, Wroclaw, Poland /Elenium-Polfa in treatment of alcohol withdrawal syndromes./ Elenium-Polfa w leczeniu alkoholowych zespolow abstynencyjnych. *Problemy Alkoholizmu* (Warszawa). 7(4):17-18, 1972.

The effect of Elenium-Polfa was studied in 20 alcoholics, 20 to 50-years-old, with a history of illness for 5 to 35 years, who were diagnosed as alcohol withdrawal syndrome. Elenium-Polfa causes relaxation of muscle tension by inhibiting the conductivity of the interneurons in the spinal marrow. The psychic and somatic symptoms of the alcohol withdrawal syndrome are described. These symp-

toms usually appear on the day following drinking, and may last for several days, even for two weeks. Treatment with Elenium of the patients under study lasted from three to five days, in doses of 100 to 300mg daily depending on the clinical symptoms. Elenium-Polfa had a quick tranquilizing effect and normalized sleep in the cases of alcohol withdrawal symptoms. Intramuscular and intravenous injections did not cause local reactions. Intravenous injections produced immediate relaxation and eliminated nervous stress and anxiety. Good effects were observed after 100mg daily doses. Some patients required larger doses, up to 300mg daily. Quick elimination of the emotional strain, which did not impair psychomotor activity and spontaneity, rendered the patients ready for psychotherapeutic treatment. 22 references.

133172 Zandman, J.C.; Dissez, C.; Carouge, D.; Letailleur, M. Clinique Neuro-Psychiatrique de Clermont, France /Morbid jealousy: clinical testing of treatment with propericiazine./ La jalousie morbide: essai de traitement par la propericiazine. Encephale (Paris). 61(2):183-195, 1972.

Propericiazine was tested for its antipsychotic effects on different aspects of morbid jealousy. Four types of jealousy are defined: reactional, paranoid, paranoid with personality change, and jealousy provoked by organic processes. The clinical study was conducted in three groups of patients: eight with neurotic jealousy; seven with systematized delirium of jealousy; and two with paranoid jealousy and personality change. The dosage level of propericiazine used was about 500mg for men and not more than 250mg for women, over a 6 to 10-week period together with low doses of antiparkinsonism drugs. Lower doses were adequate in the neurotic patients, and the higher doses were required in the psychotic cases. Maintenance doses were 15-60mg/day. The action of this drug does not alter the personality of the patient, but it does modify the feelings of frustration and aggression. The tolerance was found satisfactory and some of the symptoms (asthenia, somnolence) appearing at the initiation of treatment, receded with increasing doses. 8 references.

133207 Kruger, H.J. Pfälzische Nervenkllinik Landeck, 6749 Klingenstein, Germany /Followup results over an interval of 9 years with carbamazepine therapy in epilepsy./ Katam-

nestische Erhebungen über einen Zeitraum von 9 Jahren zur Therapie der Epilepsie mit Carbamazepin. Medizinische Welt (Stuttgart). 23(24):896-898, 1972.

The use of Tegretal (carbamazepine = 5-carbamyl-5H-dibenzo(b,f)azepine) in the treatment of epilepsy is described in a study of 59 patients. Of these, 49 were diagnosed as suffering from epilepsy of unknown origin, eight of symptomatic epilepsy, and two of 'genuine' epilepsy. The duration of the illness was from 3 to 10 years (42 cases between 8 and 10 years) and the types of seizures varied between grand mal and focal types. In all cases the initial dose was 50mg of Tegretal, which was increased subject to the patient's tolerance, between the fifth and sixteenth day of treatment. The minimal dose amounted to 400mg/day and the maximum 2000-2400mg/day. This medication was aimed at the reduction of seizures, and was gradually reduced to the point where it could be discontinued. The results proved that in 25 patients (five with combination therapy) it was possible to reduce seizures by 75%; a psychotropic effect was observed in 37 patients; and 22 patients could be rehabilitated after a 6-year interval. The most marked effects of Tegretal were found in grand mal seizures, and side-effects (dizziness, nausea, headache and somnolence) were observed during the first month of treatment. 11 references.

133218 Sarteschi, P.; Cassano, G.B.; Castrogiovanni, P.; Placidi, G.F.; Sacchetti, G. Psychiatric Clinic, University of Pisa, Via Roma 67, I-56100 Pisa, Italy /Major and minor tranquilizers in the treatment of anxiety states. Arzneimittelforschung (Aulendorf). 22(1):93-97, 1972.

The effectiveness of major and minor tranquilizers on anxiety patients with neurotic or endogenous depression is presented. Four drugs were evaluated: temazepam, flupenthixol, chlorpromazine, and droperidol, and one group was tested with placebo. The drugs were administered in the doses of 90, 2.14, 50 and 1.3mg/day per os, respectively. The assessment was on the basis of a clinical evaluation, recorded on a 10 point scale and by the Hamilton Rating Scale of Depression. In the group of 23 patients treated with temazepam, five patients had a complete remission, 13 improved, two remained unchanged, two got worse, and in one the drug was withdrawn. In the 14 patients treated with flupenthixol, two had a complete remission, six improved, one was



unchanged and five had the drug stopped. In the 15 patients treated with chlorpromazine, two had a complete remission, five improved, two were unchanged, one got worse and in five cases the drug was withdrawn. In the 16 patients treated with droperidol, one had a complete remission, five improved, three were unchanged, three got worse, and in three the drug was withdrawn. In the temazepam (minor tranquilizer) group the number and severity of side-effects were markedly lower than in the other groups. Results of the analysis also show that temazepam induces an improvement of global pathology higher than major tranquilizers. The major tranquilizers (chlorpromazine, flupenthixol, droperidol) had a higher number of side-effects and were less effective in the alleviation of anxiety in neurotic and endogenous depressed patients. 16 references.

**133262** Strian, F.; Micheler, E.; Benkert, O. Max Planck Institut für Psychiatrie, Kraepelinstr.10, 8 Munich 40, Germany Tremor inhibition in Parkinson syndrome after apomorphine administration under L-dopa and decarboxylase-inhibitor basic therapy. *Pharmakopsychiatrie Neuropsychopharmakologie* (Stuttgart). 5(4):198-205, 1972.

The effect of apomorphine medication was studied in Parkinson patients whose tremors were not ameliorated through treatment with L-dopa and a decarboxylase inhibitor. Basic therapy, 600mg L-dopa and 150mg decarboxylase inhibitor (Ro 8-0576) per day was given to 10 Parkinson patients, and apomorphine hydrochloride was given (i.v.) in increasing doses of 0.02mg/kg to 0.04mg/kg body weight. The oral dose ranged from 10mg/day to a maximum dose of 100 to 160mg apomorphine. The study was conducted on a single blind crossover basis. For both forms of administration, there was a clear reduction to complete cessation of tremors with apomorphine as well as a favorable effect on rigor, and to a lesser extent, on akinesia. By oral apomorphine administration the side-effects were few, but by i.v. administration, nausea, vomiting and hypotonia were observed. The results suggest that interactions exist between L-dopa, the decarboxylase inhibitor, and apomorphine. 30 references.

**133353** Biniek, E.; Bornscheuer, B. Univ.-Nervenklinik, Osianderstr.22, 74 Tübingen, West Germany /The effect of neuroleptic drugs on cephalic circulation in elderly psychiatric patients./ *Zur Wirkung von Neuroleptika auf den Kephala-*

*Kreislauf bei psychiatrischen Alterspatienten. Pharmakopsychiatrie Neuropsychopharmakologie* (Stuttgart). 5(2):70-81, 1972.

The effect of neuroleptic drugs upon the brachial and cephalic arterial pressures was studied in 100 patients over the age of 45 years. The drugs caused a decrease of arterial pressure in both these areas; patients over the age of 70 show an average decrease which is 2.5 times higher than that of 50-year-old patients. The decrease of the pulse pressure slows down with advancing age and the pulsation volume/second becomes more rapid. The derivatives of phenothiazine and thioxanthene effect marked changes in these measurements. Butyrophenones do not appear to have any such effects, and are therefore the drug of choice for elderly patients who require neuroleptics. The decrease of cephalic mean pressure and pulse pressure is dose dependent. Neuroleptics should not be given to aged people in doses corresponding to more than 100mg chlorpromazine daily. 36 references. (Author abstract modified)

**133472** Silverstone, Trevor. St.Bartholomew's Hospital, London The anorectic effect of a long-acting preparation of phentermine (Duromine). *Psychopharmacologia* (Berlin). 25(4):315-320, 1972.

The anorectic effects of phentermine resinate (duromine) in doses of 15mg and 30mg were compared to placebo under double-blind, controlled conditions in six moderately overweight but otherwise healthy women aged 24 to 48. The relative changes in hunger produced by each of the three preparations over a period of 10 hours were determined by using a visual analogue hunger scale. In addition, the effect of each on caloric intake 5 hours and 10 hours after administration was measured. Both 15mg and 30mg phentermine had a significant effect on caloric intake, the dosage of 15mg reducing caloric intake by 25%, and 30mg by 33% over the 10 hour observation period. There were corresponding changes in hunger rating observed, with a correlation of +0.68 between hunger rating and caloric intake. On the basis of these results, it is concluded that phentermine, in doses of 15mg and 30mg, does have a direct appetite suppressant action. 8 references. (Author abstract)

**133517** Agnoli, Alessandro; Casacchia, Massimo; Ruggieri, Stefano; Volante, Federico; Accornero, Neri. *Ia Clinica delle Malattie Nervose e Mentali,*

University of Rome, Rome Parkinson's tremor, relief by an antiaminic drug (BC 105): discussion on the biochemical pathogenesis of Parkinsonian tremor. *Zeitschrift fur Neurologie* (Berlin). 202(2):154-158, 1972.

The evaluation of BC-105, a new antiaminic agent, with marked properties of antiserotonin and antihistaminic activity on Parkinsonian tremor is described. The 17 parkinsonians were selected for a study on the basis of a consistent tremor and its constant presence throughout the day. Tremor width was followed in the study at intervals of 20, 40, and 60 minutes from the beginning of the test. The results with BC-105 showed improvement relative to the intervals of the testing as 68.5%, 80.8% and 88.4%, respectively. This is regarded as a beneficial effect on the Parkinson tremor, similar, though less intense, to that of promethazine. BC-105 has the additional advantage of exerting a more continuous action and of being free of unfavorable side-effects. 5 references.

133518 Gattringer, B.; Steinhausl, H. Krankenhaus der Barmherzigen Bruder, Rudigierstrasse 11-13, A-4010 Linz, Austria /The advantages of the combination treatment (L-dopa and decarboxylase inhibitor) in the Parkinson syndrome./ Vorteile der Kombinationsbehandlung (L-Dopa- und Dekarboxylasehemmer) des Parkinsonsyndroms. *Wiener Medizinische Wochenschrift* (Wien). 122(25/26):369-371, 1972.

Combination therapy was carried out in 20 patients in quantities of 200mg L-dopa and 50mg of decarboxylase inhibitor per capsule over the course of 1 to 6 years. Of the patient population, 10 had already been treated with L-dopa alone, four with some success but with decreasing efficacy after 6 months. Side-effects were manifested in the form of dizziness, sleeplessness, restlessness, palpitation, poor circulation and rheumatic pains. To initiate treatment, all patients were hospitalized for 10 to 28 days and the dose was begun with one capsule the first day and the addition of another capsule every second and third day until three to four capsules were administered per day; the patients continued on this dosage for at least 3 months after discharge. The first signs of an improvement were manifested in the symptoms of hypokinesia and rigor. Moods improved, particularly the depressive moods. An improvement in the tremors, at least for a short time, was reported, which appeared to be related to the time of day. 13 references.

133599 Ugarte, Guillermo; Pereda, Tamara; Pino, Maria Eugenia; Iturriaga, Hernan. Department of Medicine, Hospital San Francisco de Borja, University of Chile, Santiago, Chile Influence of alcohol intake, length of abstinence and meprobamate on the rate of ethanol metabolism in man. *Quarterly Journal of Studies on Alcohol*. 33(3):698-705, 1972.

Blood alcohol clearance was studied in inveterate (delta) and intermittent (gamma) alcoholics after variable periods of abstinence to investigate adaptive changes in the metabolic rate induced by alcohol and to establish their duration. To elucidate the possible mechanism involved, hepatic catalase activity and normal and atypical liver alcohol dehydrogenase (LADH) were measured in liver biopsies. The effect of meprobamate, a known inducer of microsomal drug metabolizing enzyme, was also explored. Results demonstrated a remarkable increase in blood ethanol clearance in alcoholics studied immediately after alcohol withdrawal. The stepwise decrease in alcohol clearance demonstrated after variable periods of abstinence suggests that adaptive changes in ethanol metabolism probably occur in alcoholics, which may explain enhanced tolerance to alcohol found among some alcoholics. A greater velocity in blood alcohol removal was observed in delta alcoholics than in gamma alcoholics, suggesting that longer periods of continuous drinking influence the development of an adaptive increase in alcohol oxidation. No correlation was observed between atypical LADH and blood ethanol removal. It is suggested that more data on humans are necessary to understand the role of catalase and microsomal enzymes in the adaptive increased ethanol metabolism. 22 references.

133603 Goodwin, Donald W.; Reinhard, John. Department of Psychiatry, Washington University School of Medicine, 4940 Audubon Avenue, St. Louis, MO 63110 Disulfiramlike effects of trichomonacidal drugs: a review and double-blind study. *Quarterly Journal of Studies on Alcohol*. 33(3):734-740, 1972.

The reported disulfiram - like effects of metronidazole are challenged in a double-blind study of flunidazole, a chemical analogue of metronidazole. The effects of flunidazole were tested in 11 healthy volunteer subjects given a large dose of alcohol. Disulfiram administered prior to alcohol ingestion interferes with the normal metabolic degradation of alcohol with an in-

creased production of acetaldehyde. This interaction has been reported to occur between metronidazole and alcohol. The present study demonstrates that a chemical analogue of metronidazole with similar trichomonocidal properties produces no ill effects when combined with alcohol and cannot be distinguished from placebo. This fact is important, since clinicians must know whether alcohol is contraindicated when metronidazole - type trichomonocidal agents are prescribed. Confirmation of such effects would provide a useful tool in studying alcohol metabolism, and such drugs may yet have a role in the treatment of alcoholism. 25 references.

**133626** Lambert, P.-A. Hopital de Bassens, Service Mixte, 73 Chambery, France /*The neuroleptic action of oxafumazine, particularly in acute psychoses.*/ L'action neuroleptique de l'oxafumazine, en particulier dans les psychoses aiguës. *Therapeutique* (Paris). 48(5-6):385-390, 1972.

The parenteral form of oxafumazine was administered to 108 patients who received doses varying between 20 and 1000mg/day, for an interval of 64 days (mean value), and a maximum of 215 days. Of these patients, 68 were schizophrenic, seven had manic symptoms, and 33 had character and behavioral disorders. The results for the schizophrenics revealed that 18 responded very well, 37 well, 10 moderately and three did not respond to treatment. Results for manic patients were: three showed very good responses; three had good responses and one demonstrated moderate response to treatment. The remainder of the patients' responses were as follows: five very good; 18 good; five moderate, and five with no response. The majority of side-effects were: somnolence, manifest hypotension, akinesia, tremor, acute dyskinetic crises, hyper-salivation, and depressive symptoms. Antiparkinson or antipsychotic drugs were used in the cases as needed. It is concluded that the dosage of oxafumazine must be determined in relation to intensity of the psychosis, the age of the subject, and to the general condition of the patient, and that it is one of the best neuroleptics for the acute psychoses, except for depression.

**133642** Weiss, O. Firma E.Scheurich, 7604 Appenweier, Postfach 44, Germany /*Treatment of psychic disturbances in aging individuals.*/ Zur Behandlung psychischer Fehlleistungen des altern-

den Menschen. *Therapie der Gegenwart* (Berlin). 111(2):206-215, 1972.

The most effective treatment for aged patients in a neurological and psychiatric practice is a combination of drug and psychotherapeutic measures. Gerigo, a combination of buphenine with vitamins, has been successfully used for several years in geriatric cases of vascular damage. A study was conducted on 148 patients between 50 and 85 years old who were suffering from cerebral circulatory disturbances, inadequate vigilance, and postapoplectic syndromes. These patients complained mainly of somatic difficulties, with emotional factors in the background; however, upon thorough examination, it became evident that the emotional disturbances were the primary cause of consultation. About 85% of the 148 patients showed improvement with Gerigo, which was particularly effective in depressive states, with thought and drive disturbances and sleep troubles. These patients were rehabilitated within 6 to 8 weeks, with a positive attitude toward their life situation. In the group of patients with vascular disorders, improvement was seen only after 2 months. Tolerance of the drug was good, and it did not appear to affect blood pressure. 4 references.

**133864** Pashchenkov, S. Z. no address /*Prevention of alcoholism.*/ O profilaktike alkogolizma. *Zdravookhraneniye Rossiyskoy Federatsii* (Moskva). 3:22-25, 1972.

The medical - biological and social aspects of alcoholism are considered in relation to crime and mental disorders. Various methods of preventing alcoholism are proposed. It is suggested that prevention should begin primarily with social organizations. Treatment with antabuse and alcohol sensitizing agents, as well as psychotropic preparations and tranquilizers, and psychotherapy is discussed.

## 12 PSYCHOTOMIMETIC EVALUATION STUDIES

**120479** Barr, Harriet Linton; Lings, Robert J. Eagleville Hospital and Rehabilitation Center, NY **LSD: personality and experience.** New York, Wiley-Interscience, 1972. 288 p. \$10.00.

The controlled investigation of personality factors in reactions to LSD is described. The nature of altered states of consciousness is covered,



along with the personality traits related to specific manifestations of such states, and the manner of functioning in these states.

**121307** Briggs, I. Medical Research Council Neuropsychopharmacology Unit, The Medical School, Birmingham B15 2TJ, England **The effects of methylated tryptamine derivatives on brain stem neurones.** *British Journal of Pharmacology* (London). 45(1):177P-178P, 1972.

At the March Proceedings of the British Pharmacological Society, the effects of the iontophoretic application of four methylated tryptamine derivatives on brain stem neurones were reported. 5-Methoxytryptamine (5-MeOT) did not antagonize the excitatory effects of 5-hydroxytryptamine (5-HT); N, N-dimethyltryptamine (DMT) antagonized the effects of both 5-HT and acetylcholine; and bufotenin and 5-methoxy-N, N-dimethyltryptamine (5-MeODMT) specifically antagonized the effects of 5-HT. In addition, it was found that DMT always inhibited neurones which 5-HT excited and sometimes excited neurones which 5-HT inhibited or did not affect. Bufotenin, 5-MeOT, and 5-MeODMT, all less potent than 5-HT, mimicked the effects of 5-HT and appeared to have some partial agonistic properties. It was also determined that 5-HT release is not involved in the mimicking reactions of the derivatives, and that the 5-HT mimicking effects of 5-MeOT, and possibly of bufotenin and 5-MeODMT, are due to the direct effects of these drugs on 5-HT receptors. 1 reference.

**121403** Simmons, James Q., III; Benor, Daniel; Daniel, Dale. Department of Psychiatry, Neuropsychiatric Institute, Department of Mental Hygiene, Los Angeles, CA **The variable effects of LSD-25 on the behavior of a heterogeneous group of childhood schizophrenics.** *Behavioral Neuropsychiatry*. 4(1-2):10-16, 24, 1972.

In an investigation of the effect of LSD-25 on childhood schizophrenic behavior and, in particular, of the consistency of drug responses in a single subject and over subjects, 50 microg LSD-25 were administered to 17 schizophrenic children aged 5-13 and subsequently produced changes in affect which were mainly positive. However, seven of the children had one or more fear and panic responses. The responsiveness of the children to external events appeared to be reduced, and they spent considerable time intensely preoccupied with certain objects to the exclusion of

other stimuli. Motor activity was considerably diminished in most of the children, and 5 were almost completely immobile during large segments of time while under the influence of the drug. None of the changes persisted longer than the experimental day. Although LSD-25 seems to have the capacity to alter the autistic barrier so characteristic of these children, the diminished responsiveness, variable affective response, and transiency of effect cast some doubt on its use as a therapeutic adjunct in the treatment of the disorder. Nevertheless, the results of this and other studies reviewed suggest several aspects of the drug effect which could bear further investigation. 5 references. (Author abstract modified)

**121726** Waltzer, Herbert. Queens General Hospital Center, 82-68 164th Street, Jamaica, NY 11432 **Depersonalization and the use of LSD: a psychodynamic study.** *American Journal of Psychoanalysis*. 32(1):45-52, 1972.

The depersonalization sometimes resulting from LSD usage, as well as possible therapeutic uses of LSD, is discussed. Of all psychiatric symptoms, depersonalization is one of the most tenacious and difficult to alter. Alteration of consciousness or state of awareness is manifested by a disturbance in the perception and experiencing of the self. Many factors have been incriminated as causing such feelings, both internal, psychodynamic ones and external ones. In the sociocultural climate of today, the problem of psychedelic drug use has become the concern of every psychiatrist and psychoanalyst. The results of LSD use depend on the type of person involved. A person with a desire to escape from reality, with no depersonalization syndrome present, and diagnosed as either psychopathic personality, neurotic character, or some type of schizophrenic, will have disorganization as a result of LSD use, including depersonalization with altered states of consciousness. However, a person with a depersonalization syndrome diagnosed as either latent or ambulatory schizophrenic or neurotic character, has an improved sense of reality after LSD use, including an improved state of consciousness or awareness and an ability to feel. In the research carried out on LSD use, Eddy found that LSD possesses an attraction for certain psychologically and socially maladjusted persons who have difficulty in conforming to social norms. Levy described the use of LSD by teenagers as an imagined magic solution to painful

conflicts of adolescence. Sharoff found that LSD users all place a high premium on the value of experiencing emotions. Alnaes reported that LSD therapy is indicated in patients who have changed their style of life and found themselves in a vacuum situation. Jorgenson concluded that those patients with anxiety neuroses and sexual neuroses are particularly fit for LSD therapy. The potential value of LSD for altering the chronic depersonalizing process warrants its consideration in other clinical syndromes where depersonalization is dynamically operative. 35 references.

**121932** Sarwer-Foner, G.J. Department of Psychiatry, University of Ottawa, Faculty of Medicine, Ottawa, Canada **Some clinical and social aspects of lysergic acid diethylamide: part I.** *Psychosomatics*. 13(3):165-169, 1972.

The social roles, the clinical effects, and the limited clinical usefulness of d-lysergic acid diethylamide (LSD-25) are reviewed. Studies of acute poisoning in experimental animals have demonstrated that the symptoms vary considerably with the species, but in general the following symptoms were fairly constant: ataxia, paralysis, occasionally increased reflex responses and various vegetative symptoms. A varied number of central nervous system effects have been seen, some of which are parasympathetic while others are sympathetic. A mydriatic effect is characteristic of LSD in all animal species. This can be inhibited or antagonized by adrenergic agents. In humans, an oral dose between 100 and 250 gamma is generally considered to be an effective dose. Many chronic users of LSD differ from usual schizophrenic patients in that they are object related and often skilled, and sometimes powerful manipulators of their environment and of their fellow human beings, in contradistinction to schizophrenic patients, who do not characteristically have these qualities. Many substances will partly or totally neutralize the LSD reaction. Some of these are: methamphetamine, amobarbital, chlorpromazine, sodium amytal, and combinations of these drugs. For 90 chronically neurotic patients who received LSD to facilitate psychotherapy of a Jungian orientation in a group discussion setting, a 55% recovery and maintenance was claimed. Other studies claimed good results through the use of LSD and abreactive techniques, free association, and education in a psychoanalytically oriented approach. All the pharmacological and clinical work

illustrated as constant features the prodromal, autonomic, largely sympathomimetic phase: dilation of pupils, nausea, flushing, and chilliness. The most common characteristic physical findings in a number of subjects were: dilation of pupils, exaggerated reflexes, and marked sweating. True physical dependence has not been seen, but psychological dependency, though varying greatly, was marked in some subjects.

**122708** Tennant, Forest S., Jr.; Groesbeck, C.Jess. Department of Preventive and Social Medicine, U.C.L.A., School of Medicine, Los Angeles, CA 90024 **Psychiatric effects of hashish.** *Archives of General Psychiatry*. 27(1):133-136, 1972.

The psychiatric effects of hashish were studied in an American army population of 36,000 in which hashish was commonly smoked over a three year period. Direct medical and psychiatric observations of 720 hashish smokers revealed that the casual smoking of less than 10 to 12gm of hashish monthly resulted in no ostensible adverse effects other than minor respiratory ailments. Panic reactions, toxic psychosis, and schizophrenic reactions were infrequent occurrences except when hashish was simultaneously consumed with alcohol or other psychoactive drugs. High dose hashish abuse of over 50gm per month in 110 patients was associated with a chronic intoxicated state characterized by apathy, dullness, and lethargy with mild to severe impairment of judgment, concentration, and memory. Severe hashish abuse and its simultaneous use with alcohol or other psychoactive drugs by large numbers of young American men is alarming. 25 references. (Author abstract modified)

**126219** Bowers, Malcolm B., Jr. Dept. of Psychiatry, Yale University School of Medicine, New Haven, CT 06519 **Acute psychosis induced by psychotomimetic drug abuse: clinical findings.** *Archives of General Psychiatry*. 27(4):437-439, 1972.

Twelve patients with acute psychotomimetic drug (LSD) induced psychotic reactions were compared on a variety of clinical measures to 26 patients with acute psychotic reactions unrelated to drug abuse. The drug induced patients tended to score prospectively higher on a number of items which have been shown to have predictive value for prognosis in psychotic states. The drug induced patients appeared clinically similar to pa-

tients with good premorbid or schizophreniform psychotic reactions. 4 references. (Author abstract)

**126902** Nakamura, G. R.; Adler, N. Los Angeles County Department of Chief Medical Examiner-Coroner, Los Angeles, CA /Which drugs are psychedelic and which psychotoxic?/ Psychotoxic or psychedelic? Journal of Criminal Law, Criminology and Police Science. 63(3):416-426, 1972.

Various hallucinogenic drugs are discussed. The meaning of various terms used to describe psychopharmacological drugs are compared with particular reference to the term psychedelic proposed by Humphry Osmond. Some comparisons are made of the effects of glue solvent sniffing and LSD experience based on available literatures. Marked differences in actions are described; the former appear to cause generalized central nervous system depression. It is questionable whether the use of the term psychedelic in the differentiation of a unique configuration is now applicable. The connotation of psychedelic in the semantic sense is that of bizarre, harmless and pleasure giving sensations while the true experiences from drug taking are fraught with psychotoxic reactions and dangers, both physical and psychic. 81 references.

**129382** Small, Joyce G.; Small, Iver F. no address Clinical results: Indoklon versus ECT. Seminars in Psychiatry. 4(1):13-26, 1972.

Clinical results of the application of indoklon versus electroconvulsive therapy (ECT) are reported. The consensus is that Indoklon induced seizures are therapeutically equivalent to those produced with bilateral ECT. Side effects and complications are comparable, although recent work suggests fewer amnesic defects with Indoklon. Although the cumbersome method of induction with Indoklon makes it a less useful procedure for routine application, it may be useful for cases resistive to ECT and possible for alternating with ECT in particular clinical situations. Areas for future research are described. 48 references.

**133576** Clyman, Robert C. Brown University, Providence, RI LSD psychotherapy: a review of the literature and some proposals for future research. Rhode Island Medical Journal. 55(9):282-286, 1972.

Literature on LSD psychotherapy is reviewed, and directions for future research are suggested. LSD psychotherapy may be effective when used in the context of conventional psychotherapy and when emphasis is given to the transcendental experience. Greater attention should be given to methodological considerations in LSD psychotherapy, such as dosage, number of treatments, and preparation. A pretest should be administered immediately prior to treatment. A more difficult control is the empirical measurement of therapist intervention, but categories can be operationally established to guide the therapist in conducting the psychotherapy. Future research should concentrate on the investigation of the subjects' motivation. Failure to appreciate the factor of motivation is evident in several studies reporting negative findings. Future research must consider physiological and perceptual data concerning LSD, and investigate differential threshold doses required by various diagnostic categories of patients. 18 references.

### 13 MECHANISM OF ACTION: PHYSIOLOGICAL, BIOCHEMICAL AND PHARMACOLOGICAL

**118964** Sapeika, N. Department of Pharmacology, University of Capetown, Capetown, South Africa Anti-obesity action of fenfluramine. Practitioner (London). 208(1247):660-661, 1972.

Fenfluramine is effective in reducing weight in the majority of patients who are obese after two or three weeks of treatment. In therapeutic doses, fenfluramine has a depressant action on the cerebral cortex, and has a central anorexiant effect in its action on the appetite of the hypothalamus. Fenfluramine also is active in carbohydrate and fat metabolism, diverting ingested carbohydrate away from adipose tissue, and inhibiting certain enzymes. So far as weight reducing is concerned, fenfluramine has an insignificant action on the alimentary tract. Fenfluramine is believed to cause obese persons to lose weight because of its action on the hypothalamus or on the metabolism of carbohydrate and fat, or on both these systems. 9 references.

**119029** Ansari, Khurshed A.; Webster, David; Manning, N. Minneapolis Veterans Administration Hospital, 54th Street and 48th Avenue South, Minneapolis, MN 55417 Spasmodic torticollis and L-dopa: results of therapeutic trial in six patients. Neurology. 22(7):670-674, 1972.



In an attempt to determine the effects of L-dopa on spasmodic torticollis, 6 men with the disease were given L-dopa; the dose of the drug was gradually increased until the maximum tolerated dose was reached. Measurements of head rotation and head tremor were obtained for all men both before and after the L-dopa treatments. The drug treatments had no significant effect on the frequency or amplitude of head tremor and there appeared to be a slight worsening of head rotation in most patients following the treatments. It is concluded that a dopamine deficit may not be involved in spasmodic torticollis and that the dystonia of the head and neck in this condition might even be the result of an overactivity of the dopaminergic system. If this is the case, the dystonia would be expected to respond favorably to agents such as reserpine and the butyrophenones, which are known to deplete brain catecholamines. The fact that spasmodic torticollis patients have responded well to haloperidol and amantadine, which has been shown to release catecholamines from peripheral nerve endings, would, therefore, appear to support the hypothesis presented. 10 references.

**119169** Noble, Rudolf, E. 1801 Bush Street, San Francisco, Calif. 94109 Anorexigenic activity of intermittent dextroamphetamine with and without meprobamate. *Current Therapeutic Research*. 14(4):162-167, 1972.

Obese patients on a low calorie diet lost weight after short-term administration of single daily 15mg doses of sustained release dextroamphetamine with and without 300mg of meprobamate. Total weight loss was substantially greater with these 2 regimens than with placebo. The repeat anorexigenic effectiveness of dextroamphetamine following an intervening non-treatment period was also demonstrated. Mean blood pressure and pulse rate with dextroamphetamine with and without meprobamate were not significantly different from those with the placebo in any of the treatment periods. Although there was no significant difference in the number of patients with side effects the total number of side effects with dextroamphetamine plus meprobamate was significantly lower than with dextroamphetamine alone. The incidence of stimulatory central nervous system (CNS) side effects was lower in the dextroamphetamine - meprobamate group than in the dextroamphetamine and placebo groups. Of the

observed, untoward CNS stimulation, such as nervousness, insomnia, headache, dizziness, only insomnia and headache were present with dextroamphetamine plus meprobamate. 4 references. (Author abstract)

**119170** Sterlin, C.; Ban, T. A.; Jarrold, L. Hopital des Laurentides, l'Annociation, Canada The place of doxepin among the anxiolytic -- sedative drugs. *Current Therapeutic Research*. 14(4):195-204, 1972.

In a comparative evaluation of doxepin, chlordiazepoxide, hydroxyzine, meprobamate, and phenobarbital, doxepin was shown to be superior in therapeutic efficiency to the other 4 substances. Forty subjects were assigned to a doxepin test group, and 10 persons each were assigned to the other test groups. Friedman 2 way analyses of variance and monotonic trend tests for improvement were significant for the total scores of both the Brief Psychiatric Rating Scale (BPRS) and the Wittenborn Psychiatric Rating Scale (WPRS), only in the doxepin group. Random ordering of the groups according to overall effectiveness as revealed in the differences in mean total scores on both psychiatric scales, BPRS and WPRS, were similar. Individual scales on the BPRS of anxiety, guilt feelings, tension, and depressive mood, and symptom clusters on the WPRS of anxiety, obsessive-compulsive-phobic, and depressive retardation all improved significantly with doxepin. The only other significant improvement in the whole population occurred in the phenobarbital group (guilt feeling). Differential therapeutic effects among the 5 treatments regimens were clear. There was improvement in 7 symptoms of the BPRS and the 4 symptom clusters of the WPRS with both doxepin and chlordiazepoxide; in 5 symptom and 4 symptom clusters with hydroxyzine; and in 4 symptoms and 2 symptom clusters with meprobamate and phenobarbital. It was also noted that the greatest incident of adverse effects was encountered in the phenobarbital group, while the lowest incident was encountered in the doxepin group. 9 references. (Author abstract)

**119246** DeVito, Anthony J.; Riklan, Manuel; Misiak, Henryk. Fordham University, New York, New York Effect of L-Dopa on electromyograph and heart rate of parkinsonians. *Perceptual and Motor Skills*. 34(1):51-54, 1972.

The effect of L-Dopa on electromyograph and heart rate of parkinsonians was investigated. Electromyograph (EMG) and heart rate recordings were taken from 17 parkinsonians before administration of L-Dopa and from 17 equated parkinsonians after a mean of 6.8mo. of drug administration. Right and left EMGs were recorded by means of surface electrodes from the sternocleidomastoid muscles of the neck. Right EMG ratings, based primarily upon amplitude, were significantly lower for post-L-Dopa group than for pre-L-Dopa group; no significant difference between pre- and post-L-Dopa groups was found with respect to left EMG. No significant difference in heart rate was found between pre- and post-L-Dopa groups. It is suggested that the drug may differentially affect left hemisphere functions. An explanation was proposed utilizing concepts of behavioral activation. 6 references. (Author abstract modified)

119394 Wyatt, Richard J.; Gillin, J. Christian; Green, Richard; Horwitz, David; Snyder, Frederick. National Institute of Mental Health, Rockville, MD 20852 Measurement of phasic integrated potentials (PIP) during treatment with parachlorophenylalanine (PCPA). *Psychophysiology*. 9(1):127, 1972.

In a paper presented to the 11th Annual Meeting of the Association for the Psychophysiological Study of Sleep, sleep phasic integrated potentials (PIP) were measured in four patients given parachlorophenylalanine (PCPA) as a possible therapy. Prior to PCPA administration, patients were given an equal number of identical placebo capsules and PIP measured. PIP were recorded on a Grass 7P3A integrator preamplifier (model 78) using galvanometers with a two inch deflection. The amplifier was set on its highest sensitivity with the lowest threshold and full rectification. The 1/2 low frequency time constant was at 10 and the integrator time constant on 0.02. Individual deflections were counted if they were at least twice baseline but not associated with spindles or within 10 sec of movement artifacts. Otherwise, techniques were the same as those of Rechtschaffen et al. (1970). Because PIP often occur in bursts not all could be counted. A ratio of counts per minute in NREM versus per minute in REM is presented. These represented an approximately fourfold rise in the NREM - REM ratio for the patients at a time when REM sleep was 10 to 30% below baseline. This change was

due both to a decrease in PIP counts in REM and an increase in NREM sleep. (Journal abstract modified)

120754 Shopsin, Baron; Stern, Steven; Gershon, Samuel. Psychiatry Department, New York University Medical Center, 550 First Avenue, NY 10016 Altered carbohydrate metabolism during treatment with lithium carbonate. *Archives of General Psychiatry*. 26(6):566-570, 1972.

A study was made to probe changes in carbohydrate metabolism during treatment with lithium carbonate in hospitalized psychiatric patients. Patients with both affective and nonaffective disorders were given oral glucose tolerance tests (GTT) before and after subacute treatment with lithium carbonate. Increased mean blood glucose levels were noted after lithium carbonate treatment in all diagnostic categories and reached statistical significance at the 60 minute interval of the GTT. There was no consistent correlation between clinical course and decreased glucose tolerance in any patient. Other patients were given single lithium carbonate loads; their blood glucose levels showed significant elevation 30 minutes after lithium carbonate ingestion. As with subacute administration, this increase was independent of psychiatric diagnosis. Implications are that decreased glucose tolerance accompanying lithium carbonate administration is due to a physiological effect of this ion and not related to psychiatric diagnosis or change in clinical state during treatment with this drug. 36 references. (Author abstract modified)

120821 Allon, Gonzalo A. University of Missouri, Missouri Institute of Psychiatry, St. Louis, MO. Biochemistry of depression (a review of the literature). *Behavioral Neuropsychiatry*. 3(9-10):2-5, 19, 1972.

Depression related biochemical changes in the areas of biogenic amines, electrolytes, and hormones are presented in a review of the literature on the biochemistry of depression. In the area of biogenic amines neurohumoral transmission, the effect of reserpine, monoamine oxidase inhibitors, imipramine, phenothiazines, lithium, catecholamines and indoleamines are discussed. Water and electrolyte metabolism, the endocrine system, carbohydrate and lipid metabolism, electroshock therapy, and antigammaglobulin activity are related to depression. 83 references.

**120835** Watson, W. C.; Corke, A. M. Department of Medicine and Gastrointestinal Unit, Victoria Hospital, London 15, Ontario, Canada **Diazepam and morphine as premedication for gastrointestinal endoscopy.** *Lancet* (London). 1(7748):490, 1972.

Since yawning is a frequent consequence of intravenous diazepam, a systematic study of diazepam use is reported in patients who were undergoing gastrointestinal endoscopy; (53 males, 55 females). The standard intravenous dose of diazepam was 10mg and this was given in 101 cases. The dose in one patient was 5mg., and in six, 20mg. Injections were given over a period of eight to 30 seconds. Thirty three patients gave a single yawn, seven a single deep sigh, two hiccuped for a few seconds, and one had an episode of Cheyne-Stokes respiration. The average time for the yawn to occur was 61.3 seconds. While it is true that after the examination patients may be somewhat drowsy and many of them have partial amnesia, a number are also partially abreactive and are prepared to divulge hitherto withheld personal details of medical importance.

**120853** Yamadori, Atsushi; Albert, Martin L. Boston University School of Medicine, Boston, MA **Involuntary movement disorder caused by methyl dopa.** *New England Journal of Medicine*. 286(11):610, 1972.

In a letter to the editor observation of involuntary choreoathetotic movements associated with the use of methyl dopa in a patient with bilateral cerebrovascular disease is reported. The abnormal involuntary movements were indistinguishable from those of Huntington's chorea. It is suggested that any interference with the dynamic equilibrium of dopaminergic and serotonergic activity in the diseased basal ganglia might be associated with abnormal movements. If the formulation is correct, it is suggested that caution be used in using methyl dopa to treat hypertension in the presence of bilateral cerebrovascular diseases.

**120855** Duvoisin, Roger C. College of Physicians and Surgeons, Columbia University, New York, NY **Reserpine for tardive dyskinesia.** *New England Journal of Medicine*. 286(11):611, 1972.

In a letter to the editor, the effectiveness of reserpine in treating the symptoms of relatively severe cases of tardive dyskinesia is noted. Reser-

pine is viewed as the only effective neuroleptic agent now available that is not also a cause of persistent dyskinesia. It is noted that reserpine differs fundamentally from the phenothiazines, butyrophenones and other neuroleptic agents in its mechanism of action. It is suggested that reserpine alone should be used in treatment of tardive dyskinesia, since phenothiazine derivatives are the cause of the dyskinesia and since it is highly possible that continued exposure to the offending agent or related substances ultimately result in a more severe dyskinesia. 4 references.

**120925** Hawkins, Rosemary D.; Kalant, H. Department of Pharmacology, University Toronto, Toronto, Canada **The metabolism of ethanol and its metabolic effects.** *Pharmacological Reviews*. 24(1):67-157, 1972.

A review of investigations of the metabolism of ethanol and its metabolic effects is presented. Suggested pathways for the metabolism of ethanol (catalase, microsomal ethanol oxidizing system, alcohol dehydrogenase), methods for measuring the rate of ethanol metabolism and the factors affecting the rate of metabolism such as NAD regeneration, bypass of disassociation of ADH-NADH complex and chronic ethanol intake are discussed. The effect of ethanol on gluconeogenesis, blood glucose, hepatic glycogen level, citric acid cycle, carbohydrate utilization, protein and amino acid metabolism are described. 641 references.

**120926** Brawley, Peter; Duffield, James C. Department of Psychiatry, University of Toronto, Toronto, Canada **The pharmacology of hallucinogens.** *Pharmacological Reviews*. 24(1):31-66, 1972.

The pharmacology of hallucinogens is reviewed. Structure and activity relationship; arousing effects of psychotomimetics; the metabolism and pharmacology of the serotonin hypothesis and the sensory system hypothesis is set forth. Hallucinogenic actions on specific systems (retina, optic tract, lateral geniculate nucleus), nonspecific systems (brainstem reticular formation, thalamic nuclei), average evoked responses, limbic system and neocortex are presented. 238 references.

**120939** Youdim, M. B. H.; Collins, G. G. S.; Sandler, M.; Bevan Jones, A. B.; Pare, C. M. B.; Nicholson, W. J. Bernhard Baron Memorial Research Laboratories, Queen Charlotte's Mater-



nity Hospital, London W6, England **Human brain monoamine oxidase: multiple forms and selective inhibitors.** *Nature (London)*. 236(5344):225-228, 1972.

Human brain monoamine oxidase (MAO), its multiple forms and selective inhibitors, was studied and discussed. Brains were obtained within 12h after death from patients aged between 70 and 92 yr who had been treated with tranylcypromine, clorgyline or iocarbaxazid in an attempt to alleviate their depressive illness. The effect of the three inhibitors on the activity of multiple forms of MAO isolated from basal ganglia and cerebral cortex using four different substrates (dopamine, kynuramine, tyramine and tryptamine) is presented. A measure of mitochondrial MAO activity revealed that after treatment with isocarboxazid the oxidation of tryptamine and dopamine was inhibited less than that of kynuramine and tyramine. After tranylcypromine, dopamine metabolism was inhibited to a greater extent than the other substrates. Clorgyline resulted in a wide variation with regard to degree of substrate oxidation. That data tends to support the thesis that clinical improvement of depressed patients is bound up with MAO inhibition. 23 references.

**120992** Maas, James W.; Fawcett, Jan A.; Dekirmenjian, Haroutune. Illinois State Psychiatric Institute, 1601 W. Taylor St., Chicago, IL 60612 **Catecholamine metabolism, depressive illness and drug response.** *Archives of General Psychiatry*. 26(3):252-262, 1972.

The relationship between therapeutic response and the urinary excretion of norepinephrine and its metabolites by depressed patients before and during treatment with imipramine or desimipramine was examined. Those patients who excreted the lesser quantities of 3-methoxy-4-hydroxyphenylglycol (MHPG) prior to drug treatment had the best response to medication. Similar relationships were not found for metanephrine, normetanephrine or vanillylmandelic acid (VMA). Those patients who responded best excreted greater quantities of normetanephrine and MHPG during drug treatment, relative to the predrug period, and those patients who responded least well had a decrement in the excretion of these two metabolites. There were significant decrements in the quantities of VMA and metanephrine excreted in urine during drug treatment but these changes were unrelated to the therapeutic response. The theoretical and practical implica-

tions of these findings are discussed. 40 references. (Journal abstract)

**120993** Fawcett, Jan; Maas, James W.; Dekirmenjian, Haroutune. Illinois State Psychiatric Institute, 1601 W. Taylor St., Chicago, IL 60612 **Depression and MHPG excretion.** *Archives of General Psychiatry*. 26(3):246-251, 1972.

A study of 12 depressed inpatients shows a significant correlation of improvement with both double-blind administration of dextroamphetamine sulfate and tricyclic antidepressant drug treatment and the low mean baseline excretion of 3-methoxy-4-hydroxyphenylglycol (MHPG). The mean MHPG excretion for six patients with a good response to dextroamphetamine was found to be significantly lower than the mean MHPG level for six nonresponders. Five of six responders showed a slight increase in MHPG excretion with dextroamphetamine while five of six nonresponders showed a modest decrease in MHPG excretion. A correlation coefficient between low mean baseline MHPG excretion and improvement in depression ratings reached .58 for the third week and .84 for the fourth week of tricyclic therapy. These findings are discussed in terms of the catecholamine depletion hypothesis of depression and the problem of the prediction of response to tricyclic antidepressant therapy. 23 references. (Journal abstract)

**120994** Whybrow, Peter C.; Coppen, Alec; Prange, Arthur J., Jr.; Noguera, R.; Bailey, John E. Department of Psychiatry, Dartmouth Medical School, Hanover, NH 03755 **Thyroid function and the response to liothyronine in depression.** *Archives of General Psychiatry*. 26(3):242-245, 1972.

Longitudinal studies of thyroid function during a four week comparative trial of imipramine hydrochloride and L-tryptophan in 30 depressed patients showed a significant fall in the free thyroxine index during the first week of the trial, but otherwise measures of thyroid activity were within normal limits and showed no change during clinical recovery. Administration of 25 micrograms of L-triiodothyronine (T3, liothyronine sodium) for 14 days was sufficient to cause some suppression of endogenous thyroid function and demonstrated that the pituitary - thyroid axis remains responsive during depressive illness. Ankle reflex time estimated prior to treatment was very significantly correlated with response to

imipramine therapy, that is, the patients with faster ankle reflex times showed a greater improvement than those with a slower ankle reflex time. A similar correlation was found between a low serum cholesterol level and a good clinical response to imipramine treatment. 25 references. (Journal abstract)

**120996** Wheatley, David. General Practitioner Research Group, 325 Staines Rd., Twickenham, England **Potential of amitriptyline by thyroid hormone.** Archives of General Psychiatry. 26(3):229-233, 1972.

A double-blind comparison was made between amitriptyline alone and amitriptyline with added L-triiodothyronine (T3, liothyronine sodium) at two dose levels (40 and 20 micrograms), in cases of depressions seen in general practice. Assessments were made initially, and at three, seven, 10, 14 and 21 days, using Hamilton's Depression Scales and the NIMH Self-Rating Scales. Significant differences in favor of the two regimes with added liothyronine were obtained at 14 days on both scales and on the Self-Rating Scales at 10 days. Results were better with the higher dose of liothyronine, particularly in females where the difference was significant at three days. Thyroid function tests were performed before and after treatment and patients with thyroid activity at the lower level of normal, responded selectively better to the liothyronine regimes at seven and 14 days. 16 references. (Journal abstract modified)

**121216** Janowsky, David S.; El-Yousef, M.Khaled; Davis, John M.; Fann, William E. Vanderbilt University School of Medicine, Nashville, TN **Chlorpromazine: another guanethidine antagonist.** Journal of the American Medical Association. 220(10):1288-1289, 1972.

Four hypertensive patients were used to study the antagonistic effects of chlorpromazine upon guanethidine sulfate. Chlorpromazine strongly reversed the antihypertensive effects of guanethidine during six clinical trials. Chlorpromazine probably works the same way as the tricyclic antidepressants, blocking the neuronal amine - guanethidine uptake pump and thereby denying guanethidine access to its site of action. Blood pressure must be carefully monitored when antipsychotic agents and guanethidine are used in combination.

**121280** Velasco, M.; Kastin, A.J.; Gonzalez-Barcena, D. Division of Neurophysiology, Scientific Research Dept., National Medical Center, I.M.S.S., Apartado Postal 73-032, Mexico, D.F. **Effect of melanocyte-stimulating hormone on the cortical somatic evoked responses in man.** Neuropharmacology (Oxford). 11(3):395-407, 1972.

The effects of synthetic melanocyte stimulating hormone (MSH) on the processes of general alertness and selective attention were investigated via analysis of the somatic evoked responses and other related electrophysiological parameters in four normal patients and six patients with panhypopituitarism. The degree of selective attention was estimated using both the amplitude of the late components of somatic evoked responses and the reaction velocity. The degree of general alertness was evaluated in terms of the EEG and EKG activities. Prior to the MSH injection, the panhypopituitarism patients showed some electrophysiological abnormalities reflecting a possible alteration in their perceptual organization mechanisms. These abnormalities included a reduction in late components of the somatic evoked responses, a relatively increased EEG activity, and a lack of EEG desynchronization. One patient showed an extraordinarily slow reaction velocity. MSH produced a significant increment in both response velocity and amplitude of the somatic evoked responses component P5a in normal and panhypopituitarism patients, correlating with increased concentration of plasma MSH. In contrast, MSH produced a variable nonsignificant effect on either muscular and nerve responses or on early somatic evoked response components. No gross MSH effect on EEG background activity and EKG frequency was found. It was concluded that MSH facilitates the selective attention process via an activation of its nonspecific thalamocortical mechanism. In contrast, MSH does not appear to affect specific afferent systems and its possible effect on the brain stem reticular mechanism mediating the process of general alertness remains questionable. 28 references. (Author abstract modified)

**121299** Valzelli, L. Istituto di Ricerche Farmacologiche 'Mario Negri,' Via Eritrea 62, 20157, Milan, Italy **Psychoactive drugs and brain neurochemical transmitters.** Archives Internationales de Pharmacodynamie et de Therapie (Ghent). 196(Supplement):221-228, 1972.

The biochemical mechanisms by which various psychoactive drugs affect the neurotransmitters at the synaptic level in the brain are discussed. The antidepressant drugs of the imipramine type block the membrane pump of the synaptic terminal, thereby preventing the reuptake of the neurotransmitter into the nerve terminal. Thus the transmitter itself remains for a longer time in contact with the postsynaptic membrane, leading to a more intense stimulation. The antipsychotic drugs such as chlorpromazine and butyrophenone derivatives block the postsynaptic membrane of the receptor, which results in the antiadrenergic effect. There is some evidence that the benzodiazepine derivatives decrease the turnover of dopamine in the striate region and the noradrenaline turnover in the thalamus - midbrain and cortical and cerebellar regions. Amphetamine directly stimulates the postsynaptic receptor, releases catecholamines from the synaptic vesicles, inhibits the reuptake of the amines into the synaptic stores, and, to a smaller extent, inhibits monoamineoxidase activity. All of these actions lead to an extremely intense stimulation of the postsynaptic receptor. Reserpine intensively depletes the storage of amines in the brain and other tissues by impairing the neurotransmitters to be stored in the synaptic vesicles. The antidepressant drugs of the monoamineoxidase inhibitor variety increase the brain levels of the neurochemical mediators by impairing their metabolic inactivation. 48 references.

**121580** Stiehl, Adolf; Thaler, M. Michael; Admirand, William H. Department of Medicine, University of California, San Francisco, CA 94122 The effects of phenobarbital on bile salts and bilirubin in patients with intrahepatic and extrahepatic cholestasis. *New England Journal of Medicine*. 286(16):858-861, 1972.

In two children with intrahepatic cholestasis treated with phenobarbital (10mg/kg body weight per day) for four days, serum bile salt concentration decreased from 100-400 to 1-10mg/ml, and pruritus disappeared. The serum bilirubin concentrations were reduced to 20-50% of pretreatment values, and the iodine-131 - Rose Bengal fecal excretion increased during treatment. In contrast, phenobarbital had no effect on serum bile salts, bilirubin, iodine-131 - Rose Bengal excretion, and pruritus in a child with extrahepatic biliary obstruction. Decreased serum bile salt concentrations and concomitantly increased fecal excretion

of Rose Bengal in phenobarbital treated patients suggest that the barbiturate stimulates bile secretion and biliary excretion of bile salts. It may be helpful in the management of young patients with intrahepatic cholestasis. 27 references. (Author abstract)

**121668** Medzihradsky, Fedor; Nandhasri, Pranee S. Department of Biological Chemistry, University of Michigan, Ann Arbor, MI 48104 Effects of some analgesics and antidepressants on the (Na<sup>+</sup> and K<sup>+</sup>)-adenosine triphosphatase from cortices of brain and kidney. *Biochemical Pharmacology* (Oxford). 21(15):2103-2109, 1972.

The effects of benzomorphans, tricyclic antidepressants, monoamine oxidase (MAO) inhibitors and chlorpromazine on the microsomal (sodium ion and potassium ion)-adenosine triphosphatase (ATPase) from beef cerebral cortex were studied. As a comparison, the interaction of these drugs with the corresponding enzyme from kidney cortex was also investigated. In addition to chlorpromazine, the benzomorphans and tricyclic antidepressants inhibited the brain enzyme considerably, whereas the MAO inhibitors had little effect. The (sodium ion and potassium ion)-ATPase from kidney was not affected by the benzomorphans or MAO inhibitors, but its activity diminished in the presence of the tricyclic antidepressants and chlorpromazine. 30 references. (Author abstract).

**121990** Baldessarini, Ross J. Laboratory of Neuropharmacology, Department of Psychiatry, Massachusetts General Hospital, Harvard Medical School, Boston, MA Symposium: behavior modification by drugs. I. Pharmacology of the amphetamines. *Pediatrics*. 49(5):694-701, 1972.

The history of the metabolism, biochemical actions, physiological and behavioral actions, and the toxicity of the amphetamines are described. The most clearly characterized actions of the amphetamines occur at catecholamine containing nerve terminals and tend to enhance the availability of the transmitter to postsynaptic receptors. The actions of the drugs in the central nervous system include stimulation of the ascending reticular formation of the brain stem, and probably enhancement of the activity of a behavior reinforcement system mediated by the median forebrain bundle. Toxic effects of amphetamine include apparent interactions at the basal ganglia to produce stereotyped behaviors in



animals and man. All of these actions might involve catecholaminergic synaptic transmission systems. Under careful, controlled medical supervision the amphetamines are remarkably safe, although in excessive doses they can produce severe toxic, sympathomimetic and psychotic effects and can be lethal. They are subject to gross abuses, and to habituation. Tolerance develops to some of their actions, but usually not to their legitimate and rational used in narcolepsy and hyperkinesia. Withdrawal symptoms are relatively minor. 65 references. (Author abstract modified)

**122102** Sharpe, J.; Marquez-Julio, A.; Ashby, P. Division of Neurology, Toronto Western Hospital, 25 Leonard Avenue, Toronto 2B, Ontario, Canada **Idiopathic orthostatic hypotension treated with levodopa and MAO inhibitor: a preliminary report.** Canadian Medical Association Journal (Toronto). 107(4):296-300, 1972.

The clinical and pathophysiological features of a case of idiopathic orthostatic hypotension (Shy-Drager syndrome) are presented. This condition is usually seen between the ages of 40 and 70 years and affects men twice as often as women. The main features are impotent incontinence of urine, postural hypotension with fixed pulse rate, anhidrosis, Horner's syndrome and signs of basal ganglia or cerebellar dysfunction. The condition is slowly progressive and death occurs, on the average, 8 years after onset. A 58-year-old patient presented with the symptoms of idiopathic orthostatic hypotension. Treatment was started with a high salt diet, postural exercises and fludrocortisone 0.2mg, 3 times daily. An attempt was made to use monoamine oxidase (MAO) inhibitors in combination with levodopa. The patient was started on tranlycpromine 10mg every 12 hours and trial doses of 100mg levodopa were given. Levodopa 50 to 100mg was then given hourly during the day. An increase in blood pressure was observed throughout the administration, but considerable fluctuation occurred. The rate of administration of levodopa appeared to be quite critical. After the first 2 weeks of treatment, the extrapyramidal features had shown definite improvement. The rigidity of the patient's neck was reduced and the tremor of the wrists and ankles abolished. The bradykinesia was slightly improved and he began to swing his arms when he walked. There was no change in the Horner's syndrome, bladder function, or sweating. These preliminary results appear to show promise in the therapeutic management of this disease. 43 references.

**122166** Goodall, McC.; Alton, Harold. Department of Pharmacology, University of Texas Medical Branch, Galveston, TX 77550 **Metabolism of 3,4-dihydroxyphenylalanine (L-dopa) in human subjects.** Biochemical Pharmacology (Oxford). 21(17):2401-2408, 1972.

Three healthy male humans were infused with 100microc of 3,4-dihydroxyphenylalanine (L-dopa)-3-14C in 1000ml of physiological saline. Urine was collected during the infusion period, after 2, 4, 8, and 24 hours, and daily thereafter for 5 days. Using a specially designed flow monitor system, the various L-dopa metabolites and biosynthetic products were separated, identified, and their radioactivity measured. Of the total radioactivity infused, approximately 71.6% was recovered within 24 hours and approximately 80.6% was recovered within 120 hours. Thirty five radioactive metabolic products were separated. Of the infused L-dopa-3-14C, 11% of the radioactivity was recovered as metabolic products of L-dopa, 64% was recovered as dopamine or metabolic products of dopamine, and 5% was recovered as noradrenaline or metabolic products of noradrenaline; no radioactive adrenaline was detected. The remaining 20% of the radioactivity was unaccounted for and was presumably distributed and subsequently released. Of the 35 metabolic products which were isolated, 16 were identified, two were tentatively identified, and 17 were unidentified. The identified products represented 65.7% of the total radioactivity recovered within 120 hours. 46 references. (Author abstract modified)

**122313** Soulaire, A.; Aymard, N. Centre psychiatrique Sainte Anne /Variations in blood and urinary electrolytes in the course of treatment with lithium salts./ Variations des electrolytes sanguins et urinaires au cours du traitement par les sels de lithium. Annales Medico-Psychologiques (Paris). 130(2):257-260, 1972.

A study of the blood and urinary electrolytes in 22 patients who were undergoing lithium therapy is presented. Sodiums, potassiums, and chlorides were followed in these patients, most of whom were in the depressive state. The two preparations used were: lithium carbonate, at a dose of 3-4 x 250mg/day; and an organic salt of lithium, par-chloro-phenoxy-acetate of lithium, at a dose of 6 x 25mg of lithium in a single dose daily. Eight patients showed satisfactory clinical improvement; the other 14 cases had to be taken off the lithium medication and given antidepressives. The lithium

results did not show any correlation with potassium concentration. However, in the patients who showed improvement, there was a significant drop in the blood potassium level at between 10 and 20 days after initiation of the treatment. It has been observed that this hypokalemia occasionally reveals anomalies in the ECG pattern; the administration of potassium, in one such case, removed this type of anomaly. It is suggested that other electrolytes be followed when lithium therapy is being administered. 11 references.

**122316** Hakim, C.; Pichot, P. no address /Prophylactic treatment of manic-depressive psychosis by lithium carbonate: theoretical and practical concern of variations in plasma concentration./ *Le traitement prophylactique de la psychose maniaco-depressive par le carbonate de lithium. Interet theorique et pratique de l'etude des variations de la concentration plasmatique. Annales Medico-Psychologiques* (Paris). 130(2):238-246, 1972.

Clinical results, obtained in the prophylactic treatment of manic-depressive psychoses with lithium carbonate are presented. The patients treated were known manic-depressives of several years' standing; lithium carbonate was administered in 250mg tablets, beginning with one tablet the first day and increasing the dose by one tablet up to 1000 or 1250mg, this being established by the blood lithium level's reaching 0.50 to 1.0mEq/l. Blood lithium levels were determined daily for the first week of treatment, twice weekly for the following 3 weeks, weekly for the first 2 months following, and controlled thereafter either monthly or bimonthly. Three patients with bipolar cyclothymia were thus followed for 3 years. During the normal phase of the illness, the blood lithium level remained stable in the same individual, with the administration of minimal doses of lithium between 16 and 17mg/kg. However, the blood lithium values are significantly increased during the depressive and significantly decreased during the manic phases. These changes in plasma lithium concentration may be due to an increased renal excretion of lithium, or to an intracellular transfer due to changes in cellular permeability. It is concluded that, for prophylactic purposes, the dosage levels should be adjusted not to exceed 20 mg/kg, so as to prevent the marked increases in blood lithium from reaching toxic levels during the depressive phase. 43 references.

**122659** Snyder, Solomon H. 725 N Wolfe Street, Baltimore, MD 21205 *Catecholamines in the brain as mediators of amphetamine psychosis. Archives of General Psychiatry.* 27(2):169-179, 1972.

Similarities and differences between amphetamine psychosis, paranoid schizophrenia, and paranoid states are discussed. It is stressed that amphetamine psychosis appears to be a fruitful experimental model of paranoid schizophrenia or paranoid state. A variety of animal and human studies suggest that neurochemical mediation of certain behavioral effects of amphetamine in animals may reflect such mechanisms in human amphetamine psychosis. Specifically, locomotor stimulation appears attributable to central norepinephrine and stereotyped behavior to dopamine, while experiments with amphetamine isomers in man suggest a dopamine mediation of human amphetamine psychosis. Pharmacological and stereochemical evidence suggests that clinical efficacy of phenothiazine drugs in the treatment of schizophrenia may be related to blockade of dopamine receptors. Taken together, these findings provoke the speculation that specific and distinct effects of amphetamines on dopamine and norepinephrine neurons may combine to account for major symptoms of amphetamine psychosis. 86 references. (Author abstract modified)

**123008** Cole, Sherwood O. Dept. of Psychology, Rutgers University, Camden College of Arts and Sciences, Camden, NJ 08102 *Comments on generalizations related to the experimental effects of amphetamine. Journal of General Psychology.* 87(1):99-103, 1972.

The value of traditional generalizations related to the facilitating and depressant effects of amphetamine on different human and animal behaviors was recently questioned. Support for continued usefulness of such generalization is discussed in terms of 1) a plea for parsimony; 2) the need for comparing and distinguishing the effects of amphetamine on different behaviors; and 3) the role of generalizations in scientific inquiry. 30 references. (Author abstract)

**123629** Prior, Pamela F.; Maclaine, G.N.; Scott, D.F.; Laurance, B.M. EEG Department, The London Hospital, London E.1, England *Tonic status epilepticus precipitated by intravenous diazepam in a child with petit mal status. Epilepsia* (Amsterdam). 13:467-472, 1972.

The precipitation of tonic status epilepticus by intravenous diazepam given during petit mal status is reported in a child with Lennox-Gastaut syndrome. This adverse effect is not specific to diazepam since tonic seizures may be provoked in a variety of circumstances in patients with this syndrome and therefore it does not limit the use of diazepam in major status epilepticus. 8 references. (Author abstract modified)

**123636** Tassinari, C.A.; Dravet, C.; Roger, J.; Cano, J.P.; Gastaut, H. INSERM U6, 280 bvd Stc Marguerite, Marseille, France **Tonic status epilepticus precipitated by intravenous benzodiazepine in five patients with Lennox-Gastaut Syndrome.** *Epilepsia* (Amsterdam). 13:421-435, 1972.

Tonic status epilepticus precipitated by intravenous benzodiazepine in five patients with Lennox-Gastaut Syndrome was examined. Since 1965, 359 parenteral injections of benzodiazepines were performed during polygraphic control in 220 epileptic children. In five patients, who suffered with the syndrome of Lennox-Gastaut, injection of a benzodiazepine (diazepam or Nitrazepam) was followed immediately by numerous tonic seizures, both subclinical and clinical, amounting to true tonic status. All the patients with one exception were at the time of the injection in a state of confusion and showed numerous or continuous discharges of slow spike waves. All the patients had received other injections of benzodiazepine with little effect, and all except one had already had episodes of tonic status. The brief delay between the injection and the appearance of seizures, the absence of clinical or EEG sleep at the time, and the temporal evolution of the tonic seizures after the injection of benzodiazepine. All these features exclude the possibility that the seizures were caused by sleep. 20 references. (Author abstract modified)

**123637** Scott, D.F.; Moffett, Adrienne; Swash, M. Section of Neurological Sciences, The London Hospital, London E.1, England **Observations on the relation of migraine and epilepsy: an electroencephalographic, psychological, and clinical study using oral tyramine.** *Epilepsia* (Amsterdam). 13:365-375, 1972.

The interaction of migraine and epilepsy in 25 migrainous patients, divided into three groups, was studied. A double blind design was used in which all patients took oral tyramine and placebo on separate occasions. Psychological data on in-

telligence, mood, neuroticism and obsessiveness were collected and serial EEGs were recorded. These were assessed by a blind, interrater method. Tyramine had no effect on blood pressure and although headache occurred on 12 of 50 possible occasions it followed tyramine alone in only three instances. None of these headaches was typical of the patients' migraine. The results of psychological testing showed that all the patients were more obsessional than a normal population but patients with migraine alone were less obsessional than those with dietary migraine or those with migraine and epilepsy. No differences in neuroticism emerged but the patients with migraine and epilepsy were less introverted than the others. EEG abnormalities were present in the preliminary records of six of ten patients with migraine alone and all of the 15 patients with dietary precipitated migraine and with migraine and epilepsy. However, definite epileptic features were seen only in the latter. These preexisting abnormalities were activated by tyramine, especially in combination with hyperventilation, in two of ten patients with migraine alone, six of eight with dietary migraine and five of seven with migraine and epilepsy. The results in the latter two groups were statistically different from those in the former. It is suggested that this activating effect on the EEG is further evidence of a close physiological relation between migraine and epilepsy, and possible mechanisms for this action of tyramine, and its implications, are discussed. 29 references. (Author abstract modified)

**123884** Robinson, S.; Dasberg, H.; Winnik, H.Z. Psychiatric Hospital, Talbich, Jerusalem, Israel **Clinical and electroencephalographic effects of anafranil treatment in depression.** *Diseases of the Nervous System*. 33(4):268-272, 1972.

Anafranil (chlor-imipramine) a drug of the tricyclic series, was applied in the treatment of a group of patients suffering from depressive states. A followup of serial EEG findings was paralleled with that of the clinical course of the disease. It was found that similar to other tricyclic antidepressants, Anafranil treatment also resulted in polyrhythmic activity, evident in the EEG records, but more than other drugs of the tricyclic group it also caused a remarkable slowing of alpha activity, thereby enhancing an anxiolytic effect. On the clinical level the speedy and effective action of Anafranil was noted, though not warranting long lasting improvement, which would



imply its preference as a primer in attempting to stabilize the action of other drugs of a similar composition. The results obtained by photic stimulation under Anafranil treatment and the hypothesis of its influence on the adrenergic activity of the brain are discussed. 19 references. (Author abstract)

**124152** Saletu, Bernd; Saletu, M.; Itil, T. Missouri Institute of Psychiatry, 5400 Arsenal St., St. Louis, Mo. 63139 **Effect of minor and major tranquilizers on somatosensory evoked potentials.** *Psychopharmacologia* (Berlin). 24(3):347-358, 1972.

A study to determine whether it is possible to differentiate between the effects on the brain of orally administered single doses of minor and major tranquilizers utilizing somatosensory evoked potentials (SEP) and to predict the clinical effectiveness of a new chemical compound based on classification by means of the SEP is presented. Placebo did not produce any relevant or significant alterations of the SEP pattern. Chlordiazepoxide induced a significant latency increase of peaks in the early part as well as a decrease in the late part of the secondary response. Concerning the amplitude measurements, a decrease in all peaks was observed, reaching a level of statistical significance in the late response. Five mg of diazepam produced similar changes, which, however, reached a level of statistical significance only in the amplitudes. In contrast to minor tranquilizers, 50 mg chlorpromazine prolonged the latency of all peaks; the later the peaks, the greater were the changes. The amplitudes were attenuated significantly in the late response, but showed a tendency to increase in the primary response. After determination of the drug profiles of these clinically known psychotropic drugs, the effects on the SEP of the new compound, SCH-12,041 were investigated. Based on the latency increase of the early part and latency decrease of the late part of the secondary response, as well as the decrease in amplitude, it was suggested that this new compound will act similar to chlordiazepoxide which was confirmed by clinical trials. The significance of the findings is discussed. 54 references. (Author abstract modified)

**124330** Wilk, Sherwin; Shopsin, Baron; Gershon, Samuel; Suhl, Michael. Department of Pharmacology, Mount Sinai School of Medicine of the

City University of New York, 100th Street and Fifth Avenue, NY 10029 **Cerebrospinal fluid levels of MHPG in affective disorders.** *Nature* (London). 235(5339):440-441, 1972.

Cerebrospinal fluid levels of 3-methoxy-4-hydroxy-phenylethylene glycol (MHPG) were measured in patients with affective disorders. The five depressed patients and the two schizoaffectives studied all showed MHPG levels within the normal range. Three of the six manic patients had MHPG levels elevated beyond the normal range. Treatment of two manic patients with lithium carbonate resulted in a sharp drop in MHPG levels. Treatment with different psychoactive drugs to the depressed and schizophrenic patients did not alter the normal MHPG levels. It is suggested that brain noradrenaline (NA) may not be lowered in depression; some manic patients may synthesize abnormal amounts of brain NA. The therapeutic effect of lithium ion may be due to interference in this process. It is not clear whether the high levels of MHPG represent a primary biochemical defect or secondary factors. Results are consistent with the hypothesis that only the manic phase of manic-depressive illness is associated with abnormal brain NA levels. 19 references.

**125029** Idestrom, C.M.; Schalling, D.; Carlquist, U.; Sjoqvist, F. Dept. of Experimental Psychiatry, Karolinska Institute, Stockholm, Sweden **Acute effects of diphenylhydantoin in relation to plasma levels.** *Psychological Medicine* (London). 2(2):111-120, 1972.

Two double-blind experiments are reported in which different doses of diphenylhydantoin were compared with placebo. Drug effects on tests, psychophysiological measures and self-ratings of mood were studied in normal subjects and related to plasma levels of the drug and psychasthenic personality traits. Significant sedative effects were obtained in some self-rating variables. The combined effect in the objective psychological tests was significantly correlated to the plasma level in the higher dose experiment. 31 references. (Author abstract)

**126220** Bowers, Malcolm B., Jr. Dept. of Psychiatry, Yale University School of Medicine, New Haven, CT 06519 **Acute psychosis induced by psychotomimetic drug abuse: neurochemical findings.** *Archives of General Psychiatry*. 27(4):440-442, 1972.

Following probenecid administration lumbar cerebrospinal fluid 5-hydroxyindoleacetic acid (5HIAA) and homovanillic acid (HVA) were measured before and during phenothiazine treatment in 12 patients who developed psychotic episodes following the ingestion of a psychotomimetic drug, probably D-lysergic acid diethylamide (LSD-25) in all but two cases. Compared to non-drug induced psychotic patients and inmate controls the drug induced patients gave evidence of decreased central 5HIAA formation, findings analogous to those obtained following the administration of LSD like drugs to animals. These results persisted during phenothiazine treatment. 21 references. (Author abstract)

**126225** Roth, Walton T.; Cannon, Eleanor H. Dept. of Psychiatry, Stanford University School of Medicine, Stanford, CA 94305 **Some features of the auditory evoked response in schizophrenics.** *Archives of General Psychiatry.* 27(4):466-471, 1972.

In a study of average auditory evoked responses in the EEGs of schizophrenics over a time course, 21 schizophrenics and 21 controls were exposed to a 10 minute sequence of frequent and infrequent auditory stimuli. The amplitude of the third positive going component (P3) of the average evoked response to infrequent stimuli was much larger in the control group. Using a P3 amplitude of 3.20 microvolts in the first 2.5 minutes as a dividing point, only seven of the 42 subjects were misclassified. This amplitude had a significant correlation with patient's age at first hospitalization. Amplitude of the second positive going component (P2) to frequent stimuli was also much larger in the control group. This amplitude had a significant correlation with medication dosage in terms of equivalent amounts of chlorpromazine. Behavioral scales failed to correlate significantly with evoked response measures. Evoked response latencies did not distinguish the two groups. 32 references. (Author abstract modified)

**126230** Rubovits, Randi; Klawans, Harold L., Jr. Presbyterian-St. Luke's Hospital, 1753 W Congress Pkwy., Chicago, IL 60612 **Implications of amphetamine-induced stereotyped behavior as a model for tardive dyskinesias.** *Archives of General Psychiatry.* 27(4):502-507, 1972.

Amphetamine induced stereotyped behavior in animals and tardive dyskinesias in humans are

both related to the activity of dopamine at striatal dopamine receptors. Anticholinergic agents potentiate the stereotyped behavior induced by amphetamines. Anticholinergic agents, as well as prolonged chlorpromazine pretreatment, decrease the threshold for amphetamine induced stereotyped behavior. These observations have several implications for tardive dyskinesias in man. Anticholinergic medications should worsen tardive dyskinesias. Anticholinergics may also decrease the threshold for tardive dyskinesias, thereby increasing the incidence of the disorder. Patients who have a subclinical abnormality of the dopaminergic receptors may manifest this movement disorder only when given anticholinergic medication. It is suggested that patients on long-term neuroleptic therapy not be routinely given anticholinergic agents, since these drugs worsen tardive dyskinesias in patients who have this disorder and may increase the incidence of tardive dyskinesias in patients receiving neuroleptics. 53 references. (Author abstract)

**126709** Sakurai, Yukihiko; Takahashi, Ryo. Department of Neuropsychiatry, Nagasaki University School of Medicine, Japan **In vivo metabolism of chlorpromazine in schizophrenic patients.** *Clinical Psychiatry (Tokyo).* 14(4):296-308, 1972.

The in vivo metabolism of chlorpromazine (CP) in schizophrenic patients is reviewed. Studies include: observation of CP in the excrement and the urine of animals and patients; metabolic intermediates of CP in animal and human bodies; metabolic intermediates of CP in the blood; and metabolic enzymes of CP. 54 references.

**126994** Safko, S.; Klimo, Z. Psychiatricka klinika FN, Kosice, Namesti Osvoboditelov 18, Czechoslovakia **/Casuistic contribution to the problem of compulsive laughter./ Kazuisticky prispevok k otazke nutkaveho smiechu.** *Ceskoslovenska Psychiatrie (Praha).* 68(1):32-34, 1972.

The case of an 18-year-old female patient in whom compulsive laughter persisted since childhood is reported. Having excluded organic disorder of the central nervous system, treatment was started with light doses of ataractica (thioxen 10mg) and a continual dose of 25mg thioridazine per day. This therapy improved the condition and symptoms lessened. 6 references. (Author abstract modified)

**127340** Wepsic, James G.; Austin, George M. Massachusetts General Hospital, Boston, MA *The neurophysiological effects of amphetamine upon the cat amygdala.* In: Eleftheriou, B., *Neurobiology of the amygdala.* New York, Plenum Press, 1972. 819 p. (p. 623-640).

The influence of amphetamine upon electrophysiological relationships between the amygdala, septal nucleus, and hypothalamic ventromedial nucleus was studied in the cat. The anatomical localization of norepinephrine (NE), its effect on behavior thought to be referable to the amygdala, and the neuropharmacologic relationship between amphetamine and NE are discussed. Although the effects of amphetamine are usually considered to be stimulating centrally, the neurophysiological effects of both parenterally administered and directly administered drugs are shown in the amygdala to decrease electrically activated evoked potentials. 50 references.

**127406** Schwin, Robert; Goodwin, Donald W.; Hill, Shirley Y. Washington University School of Medicine, St. Louis, MO *Marihuana and tidal volume.* *Journal of the American Medical Association.* 223(2):194-195, 1973.

Thirty one healthy men between the ages of 21 and 30 years who had smoked marihuana frequently for at least two years were studied to determine the acute marihuana effects on pulmonary capacity in nonasthmatic, regular marihuana smokers. The differences in tidal volume of the marihuana group were compared with the differences of the placebo group using a t-test. There was no significant effect of marihuana on pulmonary function. Pulmonary function was not correlated with extent of previous marihuana use or nicotine cigarette use. The basis for the observation that regular use of cannabis might have a cumulative effect requiring a period of abstinence for the symptoms to clear is provided. 7 references.

**127418** Frank, Ira M.; Epps, Louise D.; Hepler, Robert S.; Ungerleider, J. Thomas. UCLA Neuropsychiatric Institute, 760 Westwood Plaza, Los Angeles, CA 90024 *Marihuana: acute, cumulative, and therapeutic effects.* (Unpublished paper). Rockville, MD, NIMH, 1972. 1 p.

A double-blind study of the acute, cumulative, and possible therapeutic effects of marihuana was conducted on 21 healthy, college educated young

male marihuana smokers. Subjects were hospitalized for 36 days for the study. There was no evidence of cumulative effects, withdrawal effects or tolerance effects developing over a wide spectrum of physiological, psychological, and clinical laboratory parameters over the 36 day period. Acutely, marihuana has been found to produce a dose related increase in heart rate, systolic pressure and possibly in specific conductance of the tracheo bronchial tree. It has been found to produce a dose related decrease in intraocular pressure. There was a progressive rise in arousal, as determined by electrical skin conductance levels, seen in the placebo group which probably reflects the stress of being confined in the hospital. This rise was not observed with the marihuana group. This suggests that marihuana has properties similar to minor tranquilizers. There was mild to moderate impairment on several tests of mental performance and a tendency toward elevation of mood. Subjects who smoked very high dosages of marihuana tended toward disorganization of thinking and the emergence of paranoid ideation. The possible therapeutic potential of marihuana as a possible antiglaucoma agent, bronchodilator and tranquilizer is now being studied in glaucoma patients, asthma patients, and subjects under stress. (Author abstract modified)

**127519** Cowen, Murray A.; Nishi, Hiroyoshi; Hammack, David. SUNY Upstate Medical Center, Syracuse, NY *An electrophysiological analysis of hallucinogens.* *Biological Psychiatry.* 5(3):239-256, 1972.

The effects of internal carotid infections of a number of hallucinogenic, vasoactive, and related compounds on the transepically measured fronto-occipital potentials of pentobarbital anesthetized rats were determined; these voltages were generated by the subjacent cortex and monitor changes in its metabolic activity. As measured, the bulk of the voltage phenomena refer to the frontal cortical areas. Hallucinogens produced increases in frontal negativity in a clear dose related fashion with lysergic acid diethyl amide (LSD25) and dimethyltryptamine (DMT) producing significant effects at 1 ng or less. Ranked in order of decreasing effect were: LSD25 and DMT, diethyltryptamine (DET), adrenochrome, 3,4-dimethoxyphenylethylamine (DMPEA), bufotenine, and d-amphetamine. Control NaCl injections were without effect. Vasoactive compounds



were either ineffective or produced bidirectional effects which were clearly unlike the hallucinogens. Pretreatments with lactate, FeCl<sub>2</sub> or alpha-methyltyrosine enhanced the d-c effects of the hallucinogens. ZnCl<sub>2</sub>, CuCl<sub>2</sub>, ADH, chlorpromazine, diphenhydramine, parachlorophenylalanine (PCPA), acetazolamide, and spermidine pretreatments markedly inhibited the hallucinogen/voltage effect. Theophyllin, caffeine, dextromethamphetamine, cortisol, and epinephrine all slightly reduced the hallucinogen effect. The transcephalic d-c potentials closely monitor nucleotide metabolic changes of the cortex. The effects of pretreatments on hallucinogens is virtually identical with the effects of pretreatments on the voltage effects of administered nucleotide metabolites. 58 references. (Author abstract)

**127520** Rubin, Leonard S.; Barry, Theodore J. Temple University, Philadelphia, PA The effects of conjunctival instillation of eserine and homatropine on pupillary reactivity in schizophrenics. *Biological Psychiatry*. 5(3):257-269, 1972.

In order to determine whether significant differences in the responsivity of cholinergic parasympathetic mechanisms controlling the activity of the sphincter pupillae in response to light stimulation existed between normals and schizophrenics, eserine, a reversible acetylcholinesterase inhibitor, was instilled into the conjunctival sac. The eserized iris of psychotics was found to constrict to a greater extent and more rapidly in response to light stimulation. In a complementary fashion, pupillary dilatation in darkness was found to be markedly attenuated. A mydriatic, cholinergic blocking agent, homatropine, when instilled into the conjunctival sac of normals and schizophrenics was found to affect differentially the dilatation of the pupil in the darkness and the constriction of the pupil in response to light. The dark adapted homatropinized pupil of normal subjects was found to be significantly larger than that of psychotics. Concomitantly, homatropine was found to be significantly more effective in blocking the cholinergic sphincter pupillae of normals in response to light. These results suggest that schizophrenics are characterized, in part, by excessive central parasympathetic outflow. 20 references. (Author abstract)

**127876** Hansotia, P.; Berendes, Jerome. Department of Neurology, Marshfield Clinic, Marsh-

field, WI Methohexital hypnosis in electroencephalography. *Diseases of the Nervous System*. 33(7):451-456, 1972.

Methohexital is an ideal routine activator in electroencephalography (EEG) because its rapid and short hypnotic action promotes ease of induction and early emergence from sleep. Methohexital evokes naturally occurring epileptic foci but has no convulsant effect in normal individuals. Two hundred patients subjected to methohexital hypnosis during routine EEG recordings were studied. Also, 40 of these patients were deprived of sleep all night and then submitted to a natural sleep recording. Diagnostically, methohexital induced sleep usually provides at least as much information as natural sleep. Specifically, methohexital activates petit mal epilepsy and slow wave abnormalities in patients with structural lesions, both neoplastic and atrophic. It activates so-called epileptogenic foci, both focal and generalized, and its barbiturate induced fast activity adds another ready dimension for EEG diagnosis. 5 references. (Author abstract modified)

**128457** Carnegie, P. R.; Smythies, J. R.; Caspari, E. A.; Field, E. J. Medical Research Council Demyelinating Diseases Unit, Newcastle General Hospital, Westgate Rd., Newcastle upon Tyne, NE4 6BE, England Interaction of hallucinogenic drugs with encephalitogenic protein of myelin. *Nature* (London). 240(5383):561-563, 1972.

The effect of hallucinogenic indole derivatives related to serotonin was investigated on the interaction of human encephalitogenic protein with lymphocytes from patients with degenerative neurological disease. Drugs known to be hallucinogenic are shown to partially block the reaction of the protein with lymphocytes. Indole derivatives without hallucinogenic activity had no effect. LSD, mescaline, and dimethyltryptamine are thought to interact with receptors for serotonin. However, correlation between hallucinogenic potency and blockade in this test is not complete. Hallucinogenic drugs may exert their action along the course of the myelin sheath (perhaps in the vicinity of the nodes of Ranvier) rather than specifically at synapses. Indeed differential interference with conduction might lead to temporal dispersion of impulse volleys with consequent functional disturbance -- both sensory and motor. 33 references.

**128463** Isac, M.; Stern, S.; Edelstein, E. L. Hadassah University Hospital and Medical School, Jerusalem, Israel **The treatment of phenothiazine-induced tachycardia by propranolol.** *Israel Annals of Psychiatry and Related Disciplines* (Jerusalem). 10(3):272-277, 1972.

The treatment of phenothiazine induced tachycardia by propranolol is discussed. In a hospital population of 195 psychotic patients receiving phenothiazine treatment, 84 were found to have a chronically elevated heartrate. In 55 of these patients, the resting heart rate was 100-120/min, and in 29, 121-160/min. All 84 patients were treated with the adrenergic beta blocking agent propranolol, and their heartrate came down to physiological levels following 1-2 days, in spite of continuation of the phenothiazine treatment. The value of propranolol in counteracting the undesirable side-effect of tachycardia induced by phenothiazines is stressed. 20 references. (Author abstract modified)

**129445** Halmi, Katherine A.; Noyes, Russell, Jr. Department of Psychiatry, College of Medicine, 500 Newton Road, Iowa City, IA 52240 **Effects of lithium on thyroid function.** *Biological Psychiatry*. 5(2):211-215, 1972.

The effects of lithium on human thyroid function were studied. The results of this study confirm that lithium administration reduces serum thyroxine levels. This effect of lithium is not explained by recent human and animal investigations which have failed to elucidate the mechanism of lithium's action upon thyroid function. Partial inhibition of the thyroidal adenyl cyclase might explain the reduction of serum thyroxine levels found in these subjects after 13 days of lithium treatment. However, because the half-life of thyroxine is six days, the finding of a reduction in thyroxine levels after a single day of lithium administration is difficult to interpret. It might simply be the result of body fluid shifts caused by lithium. 15 references.

**129833** Kazamatsuri, Hajime; Chien, Ching-piao; Cole, Jonathan O. Teikyo University School of Medicine, Tokyo, Japan **Treatment of tardive dyskinesia: III. clinical efficacy of a dopamine competing agent, Methyldopa.** *Archives of General Psychiatry*. 27(6):824-827, 1972.

Abnormal movements of tardive dyskinesia are presumed to result from hyperactivity or super-

sensitivity of dopaminergic neurones in the brain. Methyldopa (Aldomet) is known to affect dopaminergic systems either by competitive inhibition of dopa decarboxylase or by synaptic action of its metabolite as a false neurotransmitter. Dual action of methyldopa on the dopamine receptor can then be expected theoretically to result in a somewhat equivocal response, although it was our hope that the results would be more helpful than harmful to the patients. On these theoretical grounds, methyldopa was administered to nine schizophrenics with tardive dyskinesia at daily dosages up to 1000 mg over six weeks. Methyldopa did not show any marked clinical effect in suppressing abnormal mouth movements, while it induced considerable decrease in blood pressure. Psychotic episodes presumably due to methyldopa were observed in two patients. 38 references. (Author abstract)

**131814** Kahr, F. M.; Mueller, P. S. no address **The effect of amitriptyline medication on depressed diabetic patients.** *Psychosomatic Medicine*. 34(5):475, 1972.

At the annual meeting of the American Psychosomatic Society, the clinical and metabolic effects of amitriptyline treatment examined in eight depressed adult onset diabetics are reported. An intravenous glucose tolerance (GTT) was performed on each before treatment. Glucose, insulin, and free fatty acid levels were determined. Behavioral ratings were also made. Patients were then placed on amitriptyline for 6 weeks at a maximum dose of 150mg/day. GTT and behavioral ratings were then repeated. Before treatment, notable findings included striking motor retardation and a very low mean rate of glucose utilization of 0.42% per min. After treatment, the patients' depressions were significantly improved, but motor retardation failed to improve. There was no significant change after treatment in any of the metabolic values measured. It is suggested that the diabetic patients' lack of metabolic response to amitriptyline may be related either to their inability to secrete large amounts of insulin or to the failure of their motor retardation to improve. (Journal abstract modified)

**132710** Reynolds, Edward H; Mattson, Richard H.; Gallagher, Brian B. Institute of Psychiatry, Denmark Hill, London, S.E.5, England **Relationships between serum and cerebrospinal fluid anticonvulsant drug and folic acid concentrations in epileptic patients.** *Neurology*. 22(8):841-844, 1972.

Forty nine epileptic and 23 control patients were studied for anticonvulsant and folate levels in serum and spinal fluid. The ratio of serum to spinal fluid diphenylhydantoin was found to be eight to one, that for phenobarbital two to one, and that for primidone one to one. These ratios seem best explained by the degree of protein binding of the anticonvulsant drugs. The phenobarbital ratio in serum and spinal fluid was three to one when the phenobarbital was derived from oxidation of primidone in vivo. The studies also indicate that the concentration of folic acid in patients receiving anticonvulsants is not only significantly decreased in serum but also in the spinal fluid and that the amount of reduction was to some extent a function of the serum diphenylhydantoin concentration. 22 references. (Author abstract)

**132870** Sclare, A.B.; Grant, J.K. Department of Psychiatry, Eastern District Hospital, Glasgow, Scotland **The Synacthen test in depressive illness.** *Scottish Medical Journal* (Glasgow). 17(1):7-8, 1972.

The response of the plasma 11-hydroxycorticosteroid (11-OHCS) concentration to tetracosactrin (Synacthen) stimulation in patients suffering from a depressive illness was investigated. The Synacthen test was administered to a group of 12 patients suffering from a depressive illness both prior to and following treatment by means of antidepressant drugs or electroplexy. The grade of depression was clinically assessed before and after treatment, and the degree of affective disturbance was assessed by means of the Hamilton Rating Scale and the Beck Scale before and after treatment. The increment in plasma 11-OHCS in response to Synacthen both before treatment (18.70microgram) and after treatment (21.21microgram) was well within the normal range. The investigation therefore failed to reveal any abnormal responsiveness of the adrenal cortex as measured by this index. The reduction in mean plasma 11-OHCS level on completion of treatment was reflected by a significant diminution in clinical and rating scores following treatment. The increment in steroid levels following Synacthen was clearly unaffected by the initial 'set point' of plasma 11-OHCS level. It is concluded that the abnormal steroid responses in depressive illness cannot be ascribed to an adrenocortical abnormality. The relevant mechanisms must be sought at a higher neurohormonal level. 6 references.

**132954** Mendels, J.; Chernik, D.A. Department of Psychiatry, University of Pennsylvania and Veterans Administration Hospital, Philadelphia, PA 19104 **The effects of SU-21707 on the sleep electroencephalogram of normal subjects.** *Current Therapeutic Research*. 14(8):454-460, 1972.

The effects of 350mg and 700mg of SU-21707, a benzamide compound, on the sleep of 12 normal male college student subjects were studied. Base line wakefulness was minimal and consequently the hypnotic effect of SU-21707 was not fully tested in this study. Results of the study showed that both 350mg and 700mg of SU-21707 had little, if any, effect on sleep patterns. 5 references. (Author abstract modified)

**132988** Saavedra, Alfredo; Medina, Aurelio. Hospital Victor Largo Herrera, Pabellon 20, Lima, Peru **Narcosis in electroshock with a derivative of fenciclidine./ Narcosis en Electroplexia con un Derivado de la Fenciclidina.** *Revista de Neuropsiquiatria* (Lima). 35(1):57-69, 1972.

Ketamine, 2-(ortho-chlorophenyl)-2-(metalamine), a derivative of fenciclidine, was administered to 50 psychiatric patients to induce narcosis before electroshock therapy. The 270 doses, ranging from 1 to 1.5mg.per kilogram of body weight, were given intravenously with a speed of injection from 30-60 seconds. These subjects included 44 psychotics, five neurotics and one pathological personality with depression and deep behavior disturbances. The clinical manifestations of the drug were analyzed during the induction of the narcosis, the narcosis itself, the electroshock application, the electronarcotic coma and the arousal. Results indicate that the drug is a nontoxic short acting anesthetic which depresses dissociatively the cortical and neocortical functions and stimulates the vital functions of the autonomic system varying with the doses employed and within their wide range of variation. Ketamine has an advantage over other general anesthetics which depress all the functions of the nervous system. 10 references. (Author abstract modified)

**132994** Dyer, D.C.; Gant, D.W. The Anesthesia Research Center, School of Medicine, Univ. of Washington, Seattle, WA 98195 **Vasoconstriction produced by hallucinogens on isolated human and sheep umbilical vasculature.** *Journal of Pharmacology and Experimental Therapeutics*. 184(2):366-375, 1973.



The effects of hallucinogenic drugs on helically cut strips of human umbilical veins and sheep umbilical arteries were studied. Muscle activity at 37 C was recorded isototonically under 1 g of tension. Bufotenine, psilocin, psilocybin, mescaline and di-lysergic acid diethylamide (LSD) all produced contractions of umbilical vasculature with LSD being the most potent. The contractions to all hallucinogens were antagonized by cinanserin. In addition, 2-bromolysergic acid diethylamide antagonized responses to mescaline and LSD on sheep umbilical arteries. Concentrations of piperoxan, tripeleennamine and atropine which antagonized responses to epinephrine, histamine and acetylcholine, respectively, did not antagonize responses to LSD, bufotenine or serotonin. It is concluded that all of the hallucinogens studied produced contractions via serotonergic receptors on umbilical vasculature. 24 references. (Author abstract)

**133055** Beaconsfield, Peter; Ginsberg, Jean; Rainsbury, Rebecca. Royal Free Hospital Medical School, Liverpool Road Branch, London N 1, England **Marihuana smoking: cardiovascular effects in man and possible mechanisms.** *New England Journal of Medicine.* 287(5):209-212, 1972.

Cardiovascular responses to marihuana smoking were studied in 10 healthy volunteers, between 30 and 40 years old, without previous marihuana experience. Marihuana smoking caused an increase in limb blood flow concomitantly with a rise in pulse rate. These responses were still evoked after administration of atropine but not after pretreatment with propranolol, a beta-adrenergic blocker. The tachycardias of atropine and epinephrine were potentiated by marihuana. These findings suggest that the increase in pulse rate and peripheral blood flow induced by cannabis involves beta-adrenergic vascular mechanisms, and counsel caution in the administration of vasoactive drugs and anesthetics to anyone who might recently have smoked marihuana. 14 references. (Author abstract modified)

**133082** Maugh, Thomas H., II. no address **Narcotic antagonists: the search accelerates.** *Science.* 177(4045):249-250, 1972.

Various narcotic antagonists are discussed. Cyclazocine produces clinically effective opiate antagonism for 24 hours but causes side-effects, which increase with dosage. Naloxone prevents the hallucinations, euphoria and other effects

produced by narcotics and other narcotic antagonists. However, large oral doses (3g for 24 hours) are expensive. Attempts to find naloxone analogs with increased potency and duration of action have resulted in the synthesis of EN-1639 (N-cyclopropylmethyl-noroxymorphone); a 50 to 100mg dose given orally produces opiate blockade for 48 hours with few side-effects. A synthetic compound, levo-BC-2605, and an oripavine derivative, M-5050, are being investigated. To extend the duration of the antagonist, naloxone pamoate is being tested in a depot form. Naloxone is attractive for use with depot systems because its potency is much greater when injected than when taken orally.

**133097** Pfeiffer, Ronald F. Department of Pharmacology, University of Nebraska College of Medicine, Lincoln, NB **Comments on the adverse effect of concurrent pyridoxine administration on the efficacy of L-dopa in treating Parkinsonism.** *Nebraska Medical Journal.* 57(9):366-374, 1972.

Pyroxidine as an inhibitor of the favorable effects of L-dopa treatment in patients suffering from Parkinson's disease is discussed. Pyridoxal phosphate is a cofactor in the conversion of dopa to dopamine; however, the effects of the L-dopa are annulled 72 to 96 hours after the beginning of pyridoxine treatment. Two explanations have been advanced to explain this apparently paradoxical inhibition of dopa decarboxylase by its cofactor: that pyridoxine increases the peripheral decarboxylation of dopa so that less dopa is available to pass through the blood-brain barrier; that L-dopa and pyridoxal phosphate interact to form a Schiff base, the product of a condensation between an aromatic aldehyde (pyridoxal phosphate) and an amino acid (L-dopa). The second explanation is more acceptable than the first because, according to it, pyridoxine would lower the peripheral concentrations of dopamine, whereas, according to the first explanation, the peripheral concentrations of dopamine would be elevated by pyridoxine. 33 references.

**133141** Samarasinghe, Jean. Royal Marsden Hospital, London **Clinical evaluation of analgesic drugs.** *Nursing Mirror and Midwives Journal* (London). 134(22):18-19, 1972.

Nalorphine, a new drug has been recently marketed which claims to have morphinelike analgesic properties with minimum antagonist properties. Since animal screen testings on pain must be

accompanied by human clinical testings, the Royal Marsden Hospital has designed a method of clinical evaluation of such drugs. Three established analgesics are used in a double-blind technique on patients of either sex. On the three days of trial, the patient is given a trial drug, and half hourly observations are made for results. Pain relief is graded on a five point scale, and side-effects are noted and analyzed.

**133175** Geissbuhler, F.; Eisenring, J.J.; Friedli, P.; Bartholini, G.; Tissot, R. Clinique universitaire de Psychiatrie, Geneva, Switzerland /Cerebral and peripheral utilization of L-DOPA in patients with parkinsonism, depressive or manic syndromes under L-DOPA perfusion with or without a decarboxylase inhibitor./ Consommation cerebrale et peripherique de L-DOPA chez des patients atteints de syndromes parkinsoniens, depressifs ou maniaques sous L-DOPA en perfusion combinee ou non a un inhibiteur de la decarboxylase. Effets pharmacologiques. *Encephale* (Paris). 61(2):127-148, 1972.

The utilization and production of cerebral and peripheral DOPA, L-3-O-methyl-DOPA (OMD) and homovanillic acid (HVA) were investigated in patients with parkinsonian syndromes (PS), depressive syndromes (DS), and manic syndromes (MS), with and without pretreatment with a decarboxylase inhibitor (DCI). There were four patients with PS, five patients with DS, five patients with MS, one with a mixed psychosis, and two patients without mental disorders. L-DOPA was perfused at the rate of 0.1mg/kg/min for an interval of 30min, and the determinations were performed on plasma from the jugular, femoral, and the antecubital veins. The results revealed that DOPA and OMD concentrations were lower in the MS patients than in the others; the MS patients, in the absence of DCI were the only ones to utilize DOPA at the cerebral level, whereas the others produced it; in the presence of DCI, all the patients utilized DOPA; DOPA and OMD appear to diffuse freely in the tissues of the forearm; the combination of DOPA and DCI exerts a transitory sedative and depressing effect on the MS patients. 14 references.

**133198** Rinne, U.K.; Sonninen, V.; Siirtola, T. Department of Neurology, University of Turku, 20520 Turku 52, Finland Treatment of Parkinson's disease with L-DOPA and decarboxylase inhibitor. *Zeitschrift fur Neurologie* (Berlin). 202(1):1-20, 1972.

Clinical trials on the effect of L-DOPA and decarboxylase inhibitor, Ro 4-4602, in the long-term treatment of Parkinson's disease were carried out and compared with L-DOPA alone. Fifty nine patients were treated for 3 to 9 months, and the plasma level of DOPA, and the concentration of homovanillic acid (HVA), and 5-hydroxyindoleacetic acid (5-HIAA) in the cerebrospinal fluid (CSF) were analyzed. A daily dosage of 800-1000mg L-DOPA combined with 200-250mg of decarboxylase inhibitor induced during long-term treatment, a significant therapeutic response which was equal to that induced by 4-5g of L-DOPA alone. Nausea and vomiting were also diminished by the combined treatment; the frequency of abnormal involuntary movements, however, was equal to that with L-DOPA alone. The maximum plasma level of L-DOPA after 200mg of L-DOPA and 50mg of Ro-4602 was equal to that of 1000mg of L-DOPA alone. During L-DOPA and decarboxylase inhibitor treatment HVA concentration in the CSF increased significantly and correlated with the dosage, and the 5-HIAA in the CSF decreased significantly during treatment. L-DOPA and decarboxylase inhibitor appears to be effective and well tolerated in the treatment of parkinsonism. The gastrointestinal side-effects are fewer than with L-DOPA alone. 63 references. (Author abstract modified)

**133265** Coper, H.; Deyhle, G.; Fahndrich, Ch.; Fahndrich, E.; Rosenberg, L.; Strauss, S.; Blum, A.; Dufour, H. Institut fur Neuropsychopharmakologie der Freien Universitat Berlin, 1 Berlin 19, Ulmenallee 30, Germany Excretion of vanillyl-mandelic acid, homovanillic acid, N-methylnicotinamide, and N-methyl-2-pyridone-5-carboxamide in urine of voluntary test persons and psychiatric patients before and after administration of methionine. *Pharmakopsychiatrie Neuropsychopharmakologie* (Stuttgart). 5(4):177-187, 1972.

A research study was carried out in 26 psychiatric patients and 16 healthy volunteers to discover whether there is a difference between the two groups in N-methylated and O-methylated metabolites, in response to administration of methionine, and whether the concentration of methylated compounds in the urine reflect psychopathologic symptomatology. The following determinations were made in the urine: homovanillic acid (HVA), vanillyl mandelic acid (VMA), N-methyl nicotinamide (NMN) and methyl-2-pyridone-5-carboxamide (MPC); the last

two compounds were measured before and after methionine treatment. The NMN and MPC excretion was not constant and could not be used for correlation between biochemical data and psychological findings. In 10 of 20 male patients and in 1 of 6 female patients, the VMA excretion was more than in the healthy volunteers. After administration of methionine only four patients still eliminated an increased quantity of VMA. The patients with increased VMA excretion differed significantly from the others in 9 of the 123 symptoms listed on sheet 3 of the Arbeitsgemeinschaft für Methodik und Dokumentation in der Psychiatrie (AMP). The symptom configuration indicates a depressive symptomatology in these patients. 25 references. (Author abstract modified)

**133307** Santos-Martinez, J.; Aviles, T.A.; Laboy-Torres, J.A. Department of Physiology and Biophysics, University of Puerto Rico, School of Medicine, San Juan, PR 00936 **The hemolytic effect of some phenothiazine derivatives in vitro and in vivo.** Archives Internationales de Pharmacodynamie et de Therapie (Ghent). 196(1):83-92, 1972.

The hemolytic effect of two phenothiazine derivatives, chlorpromazine (CPZ) and promazine (PZ) was investigated in vitro and in vivo in dogs and humans. Incubation of human red cells with varying concentrations of PZ either in the presence or absence of glucose results in a rapid hemolysis; this effect is significantly greater at the end of 24 hr than at the end of 2 hr. In an i.m. injection of 5mg/kg of CPZ in a dog, the hemolytic effect was observed only at the end of 24 hr, with a concomitant increase in plasma potassium. The effect appears to be due either to an increase in the permeability of the red cell membrane to water, or to an increase in the macromolecular permeability, with the release of hemoglobin into the surrounding medium. 14 references. (Author abstract modified)

**133348** Saletu, B.; Saletu, M.; Itil, T.M.; Coffin, C. Missouri Institute of Psychiatry, 5400 Arsenal Street, St. Louis, MO 63139 **Effect of stimulatory drugs on the somatosensory evoked potential in man.** Pharmakopsychiatrie Neuropsychopharmakologie (Stuttgart). 5(3):129-136, 1972.

The effect of single clinical dosages of methylphenidate, dextroamphetamine and placebo on the somatosensory evoked potential (SEP) of

10 healthy normal male volunteers (22 to 36 years old) was investigated 2 hr after oral administration. In contrast to placebo, which did not significantly alter the SEP, the stimulatory compounds induced systematic changes at a level of statistical significance. A decrease in latency was observed in the primary as well as in the secondary responses. Concerning the amplitudes, a decrease in the early peaks and increase in the late peaks was observed after methylphenidate, but no systemic changes occurred after dextroamphetamine. The intraindividual variability decreased in some peaks after the administration of stimulatory drugs, but not after placebo. The mode of action of stimulatory drugs on the CNS and significance of the findings regarding the utilization of SEP technique for classification of psychotropic compounds are discussed. 27 references. (Author abstract modified)

**133354** Glotzner, F.L.; Mattke, D.J. Dept. of Neurological Surgery, School of Medicine, Univ. of Washington, Seattle, WA 98105 **The action of neuroleptic drugs on the motor system in man.** Pharmakopsychiatrie Neuropsychopharmakologie (Stuttgart). 5(2):82-93, 1972.

In 10 patients with a schizophrenic psychosis the excitability change after a monosynaptic reflex (recovery of the H-reflex) was determined before and during treatment with two orally administered neuroleptics and one depot neuroleptic. At the same time the rigidity and tremor occurring in the drug induced parkinsonism were clinically rated by a rating scale. During oral administration of the drugs a highly significant correlation was found between the degree of the parkinsonism and the increase of the recovery curve in different patients and in the time course in single patients. This correlation was lower, but still significant in depot treatment. The recovery and the rated parkinsonism values are lower for the depot drug. The increase of the recovery curve corresponds to similar results seen in Parkinson's disease. The increased recovery would seem to result from a reduction of inhibition (disinhibition) on the alpha-motoneurons. Gamma-in-activation and alpha-disinhibition are presumably caused by a disturbance of supraspinal structures. The return of gamma-activity after the administration of biperiden (Akineton) becomes obvious by the augmentation of the reflex amplitude. The clinically observed psychomotor inhibition underlies a depression of the gamma-system and a disinhibi-



tion of the alpha-motoneurons, i.e. a shifting in the amount of excitation and inhibition in the motor system. 38 references. (Author abstract modified)

**133356** Consbruch, U.; Koufen, H. Psychiatrische und Nervenlinik der Universitat, Hauptstrasse 5, 78 Freiburg i.Br., West Germany /*The pharmacokinetics of lithium salts in acute strain tests in healthy subjects.*/ Zur Pharmakokinetik von Lithiumsalzen bei akuten Belastungsversuchen Gesunder. Pharmakopsychiatrie Neuropsychopharmakologie (Stuttgart). 5(2):104-112, 1972.

Eleven normal subjects underwent 55 tests in order to compare three lithium preparations; lithium acetate in fast acting preparations, and lithium carbonate and lithium sulfate in sustained release preparations. The same subjects were tested with the three preparations, allowing an interval of 2 weeks between the testing of each preparation. Blood and urinary lithium levels were determined at regular intervals. Maximal serum lithium values following administration of a single dose for the acetate, carbonate and sulfate preparations were 0.95, 0.78, and 0.64 mEq/l respectively; these values were obtained after 1 hr, 2 hr and 3 hr, respectively. The rate of disappearance from the serum was relatively constant, elimination half-time being between 12 and 17 hr. Lithium elimination after 48 hr was between 80 and 84% in all preparations and additional intake of fluid accelerated the elimination in a transitory fashion. The side-effects varied with the dosage level and accumulation rate. A slight elevation of mood was observed with five of the tests. Lithium retention varied a great deal between individuals. 19 references. (Journal abstract modified)

**133463** Bichonski, Ryszard. Akademia Medyczna, Cracow, ul.Kopernika 21, Poland /*The electric interphasic blood potential for sodium and potassium ions in patients treated with chlorpromazine for various mental disorders.*/ Elektryczny potencjal miedzyfazowy krwi dla jonow sodu i potasu u chorych leczonych chlorpromazyna z powodu roznych zaburzen psychicznych. Psychiatria Polska (Warszawa). 6(2):131-136, 1972.

Studies of the electric interphasic potential for sodium and potassium ions in 28 patients treated with chlorpromazine for various mental disorders are presented. The patients were between 19 and 61 years old, 17 women and 11 men. There were

21 schizophrenics, four with involuntary depression and three with ethological symptoms. Five of them had been ill 1 to 3 months, 18 from 4 months to 1 year, and five for over 1 year. Chlorpromazine was administered orally or injected. The average dose consisted of 400mg daily. The electric interphasic potential was computed on the basis of the hemocyte plasma sodium and potassium indicator which had been determined in normal individuals and in patients treated with chlorpromazine. Radioactive sodium ( $^{22}\text{Na}$ ) was used in the study. The findings indicate that chlorpromazine influences the transit of blood electrolytes such as sodium and potassium. Chlorpromazine was also found to change the permeability of the erythrocyte capsule and to influence the electric interphasic potential. 24 references. (Journal abstract modified)

**133506** Aleksandrovskiy, Yu.A.; Bragina, N.N.; Fleys, E.P. Ministerstvo zdravookhraneniya R.S.F.S.R., Moskovskiy institut psikiatrii, otdel psikhfarmakologii, Moscow, USSR /*A neurological analysis of the action of tranquilizer derivatives of benzodiazepine.*/ Nevrologicheskii analiz deystviya trankvilizatorov--proizvodnykh benzodiazepina. Zhurnal Nevropatologii i Psikiatrii Imeni S.S.Korsakova (Moskva). 72(5):736-742, 1972.

The effects of benzodiazepine derivatives on 392 patients suffering from vegetative disturbances were studied, and the efficacy and side-effects of these tranquilizers were analyzed. The study included a neurological analysis which took into consideration the emotiotropic, vegetotropic, and curariform influence of the drugs. The drugs had a modulating (normalizing) effect mainly on the functional state of the medium basal brain structures, and on the central links of the limbic system, hippocampus, and subthalamic nuclei. These structures were involved in the formation of different emotional conditions and accompanying visceral vegetative and somatic signs. They determined to a great extent the structure of neurotic and pseudoneurotic disorders to which the effect of these tranquilizers was directed. The muscle relaxing effect and ataxia observed during the treatment period were related to the influence of the benzodiazepine derivatives on the polysynaptical spinal apparatus and the posterior column system, and were eliminated by the action of strychnine. In most cases the muscle relaxing effect was unstable, and

appeared during the first days of therapy. When diazepam was administered in doses of 15 to 30 mg, a weakening of muscles in the legs was observed. After administering diazepam intravenously (up to 70 mg), the muscle relaxing effect appeared simultaneously in the muscles of lower extremities, trunk, upper extremities, and neck. Higher doses had a more general effect. 35 references. (Journal abstract modified)

133559 Subcommittee on Alcoholism of the Medical and Chirurgical Faculty of the State of Maryland. 2305 N.Charles St., Baltimore, MD 21218 Alcohol-related illnesses--part III. Maryland State Medical Journal. 21(10):94-97, 1972.

The relationship between alcoholism and disorders of the endocrine system, alcoholism and malnutrition, and the interactions of alcohol and other drugs are outlined. Various defects in the hypothalamic - pituitary - adrenal axis and in the metabolism of adrenal hormones have been found in alcoholics, but there is no convincing evidence that these abnormalities are causally related to alcoholism. Alcohol probably affects the metabolism of aldosterone and the catecholamines and has a powerful effect on urinary excretion. The endocrine mechanism underlying sexual dysfunction in some alcoholics is an open question. Alcohol interferes with normal processes of food digestion and absorption and also affects the capacity of the intestine to absorb nutrients, especially vitamin-B1, vitamin-B12 and amino acids. A single large dose of alcohol, a drug metabolized by the liver, leads to the inhibition of the metabolism of other drugs, while prolonged heavy intake results in an acceleration of drug metabolism. Hence sober alcoholics are tolerant toward many drugs, but intoxicated alcoholics are more sensitive. Drugs used simultaneously with alcohol may grossly distort the usual response expected from alcohol alone because of the combined additive or potentiative effects on the central nervous system. The use of any central nervous system depressants such as narcotics, hypnotic sedatives, tranquilizers, antihistamines, or volatile solvents, in combination with alcohol, is an extreme health and safety hazard.

133625 Blinder, Martin G. University of California, San Francisco, CA The use of lithium carbonate. Behavioral Neuropsychiatry. 4(3-4):22-24, 1972.

The use of lithium as a psychiatric drug is discussed. Its mechanism of therapeutic action is uncertain, but there is much to suggest that it alters the transport of electrolytes and biogenic amines across the cell membranes of the central nervous system, or modifies their intracellular metabolism. Patients whose attacks of hypomania occur frequently, or irregularly and with little warning should take lithium continuously. Though exerting little direct antidepressant effect of its own, lithium seems to be helpful in preventing recurrent depressions. It will reduce the affective component in schizo-affective forms of schizophrenia. While it has no significant effect on the quality of disturbed thinking, it can reduce its intensity. It may have a place in the treatment of intractable premenstrual tension. Side-effects are noted which include nausea, tremor, somnolence, ataxia, diarrhea, and headache. Starting on low, gradually increasing doses will greatly augment the ability of the patient to tolerate high doses. Lithium presents a potential hazard to many organ systems, and particularly to the heart, kidneys, central nervous system, and possibly thyroid gland. 3 references.

133671 Jovanovic, U.J.; Sattes, H. Universitäts-Nervenklinik und Poliklinik, 87 Würzburg, Fuchsteinstr. 15, Germany /Objective study of the action of a soporific./ Objektivierende Untersuchung einer Schlafmittelwirkung. Arzneimittelforschung (Aulendorf). 22(3):558-563, 1972.

Together with the polygraphic all-night-registration, a combination of 10-(3-dimethyl-amino-propyl)-phenothiazine (promazine) and 4-oxo-2-methyl-3-(m-tolyl)-3,4-dihydroquinazoline (methaqualone) 1:10 was clinically studied in one hundred female inpatients of a psychiatric hospital. The sleep of the individual groups was observed by the nurse at intervals of one hour. The results of the observation were statistically noted and evaluated. Tables indicate the relation between the effect of hypnotics and previous and simultaneous medication, the relation to the age distribution, the character of the disease, and also to the season in which treatment was given. Under the indicated criteria, the therapeutic effects could be classified as very good in 32%, and as good in 48% of the cases. In the case of endogenous depressions, remarkably good results were observed in combining the investigated hypnotic with the antidepressive daytime medication. Side-effects and morning hangovers were not observed. 14 references. (Journal abstract modified)

**133685** Vesell, E.S.; Passananti, G.T.; Viau, J.-P.; Epps, J.E.; Di Carlo, F.J. Dept. of Pharmacology, Penn. State Univ. College of Medicine, Milton S. Hershey Medical Center, Hershey, PA **Effects of chronic prazepam administration on drug metabolism in man and rat.** *Pharmacology*. 7(3):197-206, 1972.

Opposite effects on drug metabolism in man and rat were observed after prazepam, a benzodiazepine derivative, was administered on a chronic basis. After an oral dose of 10mg t.i.d. for 7 days, prazepam prolonged antipyrine half-lives in all but one of 12 healthy Negro volunteers. In five of these subjects who also received a single dose of 14C-prazepam before and after the 7-day course of unlabeled prazepam, the plasma half-life of 14C-prazepam was substantially prolonged in three volunteers, only very slightly prolonged in the fourth subject and shortened in the fifth. In male Sprague-Dawley rats an i.p. dose of unlabeled prazepam (100mg/kg) administered daily for 7 days caused induction of three hepatic microsomal proteins, but after 4 days only one of these proteins (cytochrome P-450) was significantly enhanced. After 4 days on this dose of prazepam, the plasma half-life of 14C-prazepam in the rats was reduced from 4.6 to 2.2 hr. These results are discussed from the point of view of species differences in drug metabolism; of the role in drug interactions of dose, route of administration and length of administration; and of the importance of differences among healthy, nonmedicated individuals in influencing the nature and extent of alterations in drug metabolism. 8 references. (Author abstract)

**133718** Dreyfuss, Jacques; Shekosky, James M.; Ross, John J., Jr.; Schreiber, Eric C. Department of Drug Metabolism, Squibb Institute for Medical Research, New Brunswick, NJ 08903 **Species differences in the metabolism of a tricyclic psychotropic agent, SQ 11,290-14C.** *Toxicology and Applied Pharmacology* (London). 22(1):105-114, 1972.

The metabolism of SQ-11290-14C was studied in mice, rats, guinea pigs, hamsters, New Zealand White or Dutch rabbits, monkeys and man after po administration. The excretion of SQ-11290-14C, its metabolites, or both, was chiefly in the feces (with exception of hamsters and man). Rats and rabbits of either strain excreted 2 to 5% of the dose, while mice and hamsters excreted 20 to 42%, as  $^{14}\text{CO}_2$ . Hamsters appeared to excrete radioactivity in a quantitative manner most similar

to that observed in man, but the metabolites found in the urine and feces of these two species were not similar. The disposition of SQ-11290-14C in albino and pigmented rabbits cannot be distinguished on the basis of the excretion of radioactivity, but different metabolites appear to be excreted in the urine. No unchanged SQ-11290-14C was detected in the excreta of humans. One percent of the dose or less was present as unchanged SQ-11290-14C in the urine of any animal species. In the feces, an average of 2 to 6% of the dose was excreted by animal species as unchanged SQ-11290-14C. Whereas albino rabbits excreted in the feces only 3.6% of the dose as unchanged drug, Dutch rabbits excreted about 16.7% of the dose as unchanged drug. In those human subjects excreting large amounts of radioactivity as  $^{14}\text{CO}_2$ , cleavage or degradation of the side chain, or both, rather than hydroxylation of the ring system as had been found previously in dogs, appeared to be a major metabolic pathway. 5 references. (Author abstract)

**133749** Del Bianco, P.L.; Franchi, G.; Fanciullacci, M.; Sicuteri, F. Department of Clinical Pharmacology, Headache Center, Medical University of Florence, Florence, Italy **Clinical pharmacology of 5-hydroxytryptamine and catecholamines venomotor receptors.** *Archives Internationales de Pharmacodynamie et de Therapie* (Ghent). 196(Supplement):113-116, 1971.

Using the highly sensitive venoconstriction test (VCT), which can be used to study the sensitivity of the venomotor receptors to catecholamines, it was found that serotonin is twice as active as noradrenalin, which itself is twice as active as adrenalin. It was also demonstrated that serotonin motoreceptors are highly inhibited by the lysergic and nonlysergic derivative antagonists of serotonin. LSD-25 is able to inhibit threshold doses of serotonin (50 to 500 ng). Methysergide, BC-105, and 1-methyl ergotamine tartrate, which are all specific serotonin inhibitors, have been advocated for the prophylaxis of migraine. Using the VCT it was further demonstrated that local and general treatment with monoamine oxidase inhibitors significantly increase the responsivity to serotonin and catecholamines. The VCT was also employed in gaining evidence for the existence of beta-receptors and demonstrating their vasodilating action on the venous walls. The administration of Inpea, a specific beta blocker, produced a progressive increase in the



spasmogenic activity of adrenaline; the venoconstriction potency of adrenaline during beta blockade may be several times greater than usual. LSD-25 was also found to lower the venospastic threshold dose of adrenaline while inhibiting the action of serotonin. 6 references.

**133780** Baggot, J.Desmond; Davis, Lloyd E.; Neff, Carol A. Division of Comparative Pharmacology, College of Veterinary Medicine, Ohio State University, Columbus, OH 43210 **Extent of plasma protein binding of amphetamine in different species.** *Biochemical Pharmacology* (Oxford). 21(13):1813-1816, 1972.

The extent of plasma protein binding of amphetamine in different species was determined in vitro by the equilibrium dialysis techniques using H3-d-amphetamine sulfate and liquid scintillation counting. The percent of amphetamine bound to plasma proteins was independent of drug concentration within the range of concentrations studied (0.0000025M to 0.00004M). Protein binding was determined in pony, goat, swine, dog, cat, monkey, rabbit, opossum, rat, mouse, human and chicken plasmas at a drug concentration of 0.00001M. The extent of binding was less than 45% in all species but varied significantly among species (F-test, p less than 0.01). Protein binding of this base appears to be associated with plasma albumin. There was no binding to 3% equine or porcine gamma globulin or to 2% ovalbumin. The extent of protein binding (mean  $\pm$  Standard Error) in intact (23.1%  $\pm$  1.7) and nephrectomized uremic (24.3%  $\pm$  1.5) dogs was not significantly different. The nonprotein bound drug appeared to diffuse freely into cerebrospinal and ocular fluids. The extent of protein binding was independent of drug concentration, similar in normal and uremic plasmas, and significantly different among several species. 11 references. (Author abstract)

**133807** Barbeau, Andre; Mars, Harold; Botez, Mihai I.; Joubert, Marie. Department of Neurobiology, Clinical Research Institute of Montreal, 110 Pine Avenue West, Montreal 130, P.Q., Canada **Levodopa combined with peripheral decarboxylase inhibition in Parkinson's disease.** *Canadian Medical Association Journal* (Toronto). 106(11):1169-1174, 1972.

The authors report their experience, over a 26-month period, in the management of 60 parkinsonian patients with the combination of levodopa and an inhibitor of peripheral dopadecarboxylase,

Ro-4-4602. This approach to Parkinson's disease is useful, safe, and at least as effective as levodopa alone. To date there have been no recognizable toxic effects attributable to Ro-4-4602. This agent appears to prolong the duration of action of levodopa, smoothing out its therapeutic effects. The percentage of patients obtaining a very good and excellent response is slightly increased. There is a possible diminution in the late occurring bradykinetic and hypotonic freezing episodes. Nausea and cardiac arrhythmias are lessened, as are the incidence and severity of hypotension. Abnormal involuntary movements remain the limiting adverse side-effect. 56 references. (Author abstract)

**133857** Astrakhantseva, L. Z. no address /Geriatric pharmacology./ *Geriatricheskaya farmakologiya*. Leningrad, Meditsina, 1972. 277 p. \$5.50.

A survey was made of the literature concerning the specific effects of drugs in the aging organism. The characteristics of the effect of most existing drugs administered to the elderly, with analysis of both indications and contraindications for administration of the given drugs, are given. Considerable attention is devoted to some new preparations, similar in structure to pyrimidine, which have become widely used in medical practice. The topics discussed include: the use of drugs acting on the nervous system; drugs used in diseases of the cardiovascular system; drugs used in other diseases among the aging; medicinal macrobiotics; and methods for further search for drugs to enhance a healthy old age. 870 references.

**134033** no author. no address **'Perfect' opiate antagonist?** *Medical World News*. 13(24):62, 1972.

The possible value of naloxone pamoate as an opiate antagonist is discussed. Naloxone is non-narcotic, nonaddictive, and noneuphoric. The pamoate has demonstrated an antinarcotic effect for as long as three days; no side-effects were noted in 13 human (addict) volunteers. The disadvantages of take home methadone and the resulting abuses may be avoided by an appropriate narcotic antagonist with activity for weeks or months.

**134312** Heiberg, Astrid; Lingjaerde, O. Univ. Psychiatric Clinic, Vinderen, Oslo 3, Norway **A controlled study on the possible effect of dihydroer-**

gotamine against dryness of the mouth in patients treated with tricyclic antidepressants. *Acta Psychiatrica Scandinavica* (Kobenhavn). 48(4):353-359, 1972.

A double-blind, crossover trial with dihydroergotamine methanesulphonate (DHE) versus placebo was performed in order to see whether DHE could effectively counteract dryness of the mouth in psychiatric inpatients treated with tricyclic antidepressants. Tablets containing 2.5mg DHE or placebo were given in a dosage of one tablet t.i.d., each for three consecutive days, in random order, with a washout period of four days in between. The salivation was registered subjectively and objectively (with dental swabs) at 8 A.M. and 1:30 P.M. For comparison, the objective registration was also performed on nine healthy, untreated controls. The salivation was found to be considerably below normal level in the patient group, but since it soon became apparent that there was no practical important difference between the treatment periods, the trial was interrupted after only nine patients had been investigated. Statistical analysis, whether of the subjective or the objective assessment, could not demonstrate any significant difference between the treatment periods. Some possible reasons for this unexpected lack of effects are briefly discussed. 15 references. (Author abstract modified)

#### 14 MECHANISM OF ACTION: BEHAVIORAL

119034 Drew, William G.; Kiplinger, Glenn F.; Miller, Loren L.; Marx, Marilyn. Department of Psychiatry, University of Kentucky, College of Medicine, Lexington, KY **Effects of propranolol on marihuana-induced cognitive dysfunctioning.** *Clinical Pharmacology and Therapeutics*. 13(4):526-533, 1972.

Twenty four paid male volunteers were allowed to smoke marihuana cigarettes calibrated to deliver a dose of 25 micrograms/kg of delta9-tetrahydrocannabinol (delta9-THC). All subjects were given propranolol or a placebo (administered in a double-blind fashion), in four divided doses beginning 24 hr before and ending 2 hr prior to smoking. Marihuana smoking resulted in significant disruption in the recall of narrative material and moderate impairment in performance on a modified version of the Reitan Trail Making test. Stroop-Color Word performance was not affected by marihuana. Propranolol (Inderal), a beta adre-

nergic blocking agent, failed to interact with the marihuana to reduce its disruptive effects on any of the tests. 28 references. (Author abstract)

119068 White, Kenneth D.; Mangan, Gordon L. Department of Psychology, University of Queensland, Brisbane, Queensland, Australia **Strength of the nervous system as a function of personality type and level of arousal.** *Behaviour Research and Therapy*. 10(2):139-146, 1972.

The threshold of transmarginal inhibition (TTI), indexed by the duration of the visual afterimage under massed trial conditions, was examined in 16 subjects under three treatment conditions: caffeine, placebo, and sodium amytal. The subjects were selected on the basis of extraversion and neuroticism scores on Eysenck and Eysenck's (1964) Personality Inventory. Neuroticism was found to be positively related to the growth of transmarginal inhibition. 31 references. (Author abstract)

119758 Feldman, Harold S. New Jersey College of Medicine and Dentistry, Newark, N. J. **Antidepressant drug therapy: addicts versus nonaddicts.** *Psychosomatics*. 13(1):41-48, 1972.

The effects of iprindole, a new tricyclic antidepressant closely allied to imipramine, on treatment of narcotic addicts during the post-withdrawal phase and on depression in nonaddicts were investigated. The first study was carried out among 40 imprisoned young male narcotic addicts recently withdrawn from heroin and the second study was carried out in 48 middle-aged, predominantly female neurotic and psychotic patients of a psychiatric hospital. The prisoners, aware of possible eligibility for parole if they cooperated in the study, exhibited dramatic improvement with either treatment (85% improved with iprindole and 70% with placebo). Conversely, there was a statistically significant difference in the response of the hospitalized patients to the 2 treatments. These patients, carefully selected to have high anxiety and severe depression, were almost entirely unaffected by placebo but highly responsive to iprindole. The average daily doses employed were 80mg and 118 weeks, respectively in the addicts and nonaddicts. A few mild, reversible autonomic symptoms were noted in 9 of the nonaddicts treated with iprindole: dryness of the mouth in 7 and 5 other symptoms in single instances. The data are consistent with the conclusion that iprindole, at the dosage used, has antidepressant

activity of a significant order in the usual type of hospitalized depressed patient. 15 references.

**120081** Rappaport, M.; Hopkins, H. K.; Silverman, J.; Hall, K. Agnews State Hospital, San Jose, CA 95114 **Auditory signal detection in schizophrenics.** *Psychopharmacologia* (Berlin). 24(1):6-28, 1972.

Differences in auditory signal detection between paranoid and nonparanoid schizophrenic patients were examined under 6 signal to noise conditions for those off and on different dosages of phenothiazine medication. Their performance was compared with normals. It was found that with increasing levels of phenothiazine medication the signal detection performance of paranoids increased while for nonparanoids it decreased. Normals performed best under all signal to noise conditions and paranoids worst. Only paranoids as compared to nonparanoids adopted consistently and significantly more conservative decision making criteria. Both normals and nonparanoids adopted decision criteria close to optimum. The  $d'$  measure of signal detection theory used to assess signal detection performance does not appear to reflect solely the sensitivity of the auditory mechanism in schizophrenics. Rather it reflects the combined influences of decreased correct responses, increased propensity to make omission errors, and large response variability. 34 references. (Author abstract)

**120730** Fraiberg, Paul L. Allen Dee Nursing Centers, 12950 W. Chicago Blvd., Detroit, MI 48228 **Control of behavioral symptoms in patients with long-term illness.** *Diseases of the Nervous System*. 33(3):178-182, 1972.

Thioridazine (mean dosage, 137mg daily) was administered to a group of behaviorally disturbed geriatric patients at a convalescent center. All patients also had chronic or terminal illnesses, as evidenced by a mortality rate of approximately 27% during the time of the study. Changes in psychogeriatric and behavioral manifestations were rated separately by the physician and nursing staff over a two month treatment period. The majority of patients (34 or 58%) showed substantial improvement, being noticeably less violent or aggressive, tense, and apprehensive, and showing more cooperation, better impulse control, and improved sleeping habits. Side effects of treatment with thioridazine were drowsiness, somnolence, or lethargy in eight patients. 4 references. (Author abstract)

**121449** Winsberg, Bertrand G.; Bialer, Irv; Ku-pietz, Samuel; Tobias, Jack. Child Psychiatric Evaluation Research Unit, New York State Department of Mental Hygiene, 524 Clarkson Ave., Brooklyn, NY 11203 **Effects of imipramine and dextroamphetamine on behavior Of neuropsychiatrically impaired children.** *American Journal of Psychiatry*. 128(11):1425-1431, 1972.

The comparative effectiveness of imipramine, placebo, and dextroamphetamine as therapeutic agents for the control of hyperkinetic and aggressive behaviors in children was assessed. Behavioral change under the drug conditions was evaluated using a 39 item behavior rating scale. The results indicate that imipramine is an effective agent for the control of hyperactivity and aggression in behaviorally impaired children. Implications of the findings for clinical application in pediatric psychopharmacology are presented and discussed. 27 references. (Author abstract)

**121884** Meier, Manfred J.; Baker, A.B.; Martin, William E. Department of Neurosurgery, University of Minnesota, Minneapolis, MN **Some quantitative behavioral changes in L-dopa therapy.** *Geriatrics*. 27(6):89-97, 1972.

The development of quantitative methods for assessing changes in parkinsonian patients treated with L-dopa was presented. A battery of visuomotor tasks of progressively increasing difficulty was administered to patients between the ages of 24 and 78 under the following conditions: 1) on conventional anticholinergic medications; 2) one week following withdrawal of previous medications; and 3) six weeks after the initiation of L-dopa therapy. The tasks included: a grooved peg-board test; a 'two-hand coordination test involving simultaneous stylus tracing of two triangular courses; and a form placement test performed under conditions of congruent, reversed, and inverted visual feedback. Two subgroups were compared to an age equivalent normal reference group on a variety of error and time scores. These subgroups included patients who were unable to perform at measurable levels during the base line period (incapacitated group) and patients who could perform the task within definable limits at that time (impaired group). With L-dopa therapy, the incapacitated group performance measures converged upon those of the impaired group. The performance levels of both groups approached normal levels on some measures. The magnitude of the performance gains decreased as specific task requirements were made more difficult. 10 references. (Author abstract modified)



**121988** Eisenberg, Leon. Massachusetts General Hospital, 32 Fruit Street, Boston, MA 02114 Symposium: behavior modification by drugs. III. The clinical use of stimulant drugs in children. *Pediatrics*. 49(5):709-715, 1972.

Dextroamphetamine and methylphenidate treatment of children having a condition known variously as minimal brain dysfunction, hyperkinetic syndrome, or hyperkinetic reactions of childhood, is discussed. This clinical syndrome is characterized by motor restlessness, short attention span, poor impulse control, learning difficulties, and emotional lability. In hyperkinetic children, the administration of the stimulant drugs, dextroamphetamine (DA) and methylphenidate (MP) suppresses overactivity and impulsivity and lengthens attention span. If a minimal first dosage of 5mg DA or 10mg MP, produces no improvement in 2 to 3 days, the dosage could be increased by small increments, up to a maximum dosage of 40mg DA or 80mg MP. Common side-effects are insomnia and anorexia, which both disappear in one to two weeks if the dosage is held steady. The child requires prolonged treatment, ranging from 6 months to 5 years, to alleviate motor and attention disorders that interfere with academic and social learning. Three instances when an overactive and easily distracted child must not be administered stimulant drugs are: (1) if anxiety is exhibited in the midst of grossly disorganized family life, (2) if the fidgetiness and inability to concentrate is due to hypoglycemia, and (3) if the child is in a classroom which, itself, produces distractibility. The child who receives these drugs as medical treatment prior to adolescence will probably not be prone to drug abuse in adolescence, as the drug does not produce euphoria, and the children develop the habit of considering drugs as medicine, for treatment of illness, rather than as thrill inducers. 35 references.

**121989** Connors, C.Keith. Massachusetts General Hospital, 32 Fruit Street, Boston, MA 02114 Symposium: behavior modification by drugs. II. Psychological effects of stimulant drugs in children with minimal brain dysfunction. *Pediatrics*. 49(5):702-708, 1972.

In the first of two studies that are reported, 75 children, with minimal brain dysfunction, ranging in age from 74 to 154 months, participated in a study to determine their response to methylphenidate (MP) or dextroamphetamine (DA); in the second study, 81 children with

minimal brain dysfunction were administered magnesium pemoline (P) or dextroamphetamine. In the first study, 75 patients were randomly divided into three groups. Twenty nine received MP, 24 received DA, and 22 received placebo. The dosage began with 5mg DA or 10mg MP. Gradually the dosage was increased to 15mg DA or 30mg MP, given twice a day. In the second study three groups were randomly given DA, P and placebo. P was begun with a dosage of 25mg and increased to 125mg. DA was begun in 5mg dosages and increased up to 40mg. Both studies provide evidence of improved behavior as judged by clinicians, parents, and teachers. There are significant drug effects on some cognitive, perceptual, and achievement measures. The DA-MP study showed effects in the vigilance task. Effects on achievement were more striking in the DA-P study than in the DA-MP study. There was improvement in the Draw-A-Man and Bender tests with the DA-MP. These inconsistencies were probably a consequence of the sample chosen, rather than in differences in length of treatment or dosage. There is physiological and psychological heterogeneity in children with presumed minimal brain dysfunction. All children do not respond in the same way to drug therapy. The therapy should be based on the deficit of most concern.

**122178** Cappell, Howard; Webster, C.D.; Her-ring, Barbara S.; Ginsberg, Ronald. Addiction Research Foundation, 33 Russell Street, Toronto 179, Ontario, Canada Alcohol and marihuana: a comparison of effects on a temporally controlled operant in humans. *Journal of Pharmacology and Experimental Therapeutics*. 182(2):195-203, 1972.

The effects of smoked marihuana and ethanol on human schedule controlled behavior were compared. The behavioral task involved a differential reinforcement of low rate schedule in which subjects were required to space key press responses at least 20 seconds apart in order to receive a small monetary reinforcement. Another feature of the schedule was that reinforcement was available for a limited period ranging from 0.5 to 4.0 seconds. Subjects received immediate feedback indicating whether a response was premature, correct, or late. In a Latin square design, 12 subjects (21 to 28 years old) performed the required task after consuming marihuana cigarettes containing a total of 0, 4, 8, or 16mg of delta9-tetrahydrocannabinol, and 12 additional subjects were tested

following the ingestion of 0, 0.48, 0.72, or 0.96g/kg of ethanol. There was a dose related decrement in reinforced responses after marihuana. Moreover, a reliable shift toward errors of premature responding was observed with increasing doses. Ethanol had no reliable effects on the schedule controlled behavior at any dose. Marihuana also had a dose related effect on pulse rate and subjective ratings of the degree of high. The results indicate that marihuana, in contrast to alcohol, interferes with temporally controlled responding even when there is a maximum of feedback concerning response accuracy. A placebo effect on behavior was found with marihuana but not with ethanol. 18 references. (Author abstract modified)

**122193** Blackwell, B.; Lipkin, J.O.; Meyer, J.H.; Kuzma, R.; Boulter, W.V. Department of Pharmacology, University of Cincinnati, Cincinnati, OH 45229 **Dose responses and relationships between anticholinergic activity and mood with tricyclic antidepressants.** *Psychopharmacologia* (Berlin). 25(3):205-217, 1972.

A pilot study showed that single doses of imipramine (100mg) produced a maximum reduction in salivation after 3 hours; this effect persisted for 72 hours following the administration of the drug. The effects obtained after 3 hours were reproducible in three subjects, 2 men and 1 woman, and differed from control levels on all six occasions of testing. A double-blind study was then carried out with six subjects, three men and three women between 22 and 30 years old, to ascertain whether a dose response measured by salivary flow could be obtained with imipramine and dimethacrin, a developmental drug with fewer anticholinergic effects than imipramine in animals. A further objective was to study the effects of both drugs on subjective feelings of mood, appetite, and dry mouth in order to make correlations between these effects and the anticholinergic activities of the drugs. The results showed a linear log dose response reduction in salivation for imipramine which differed significantly from the response induced by dimethacrin and a placebo. Significant changes on the Clyde Mood Scale in sleepiness and friendliness factors occurred only with imipramine, raising the question of whether there is a casual relationship between the central actions of imipramine and its anticholinergic activity. The significant decrease in friendliness with imipramine as compared to the

placebo suggests that the anticholinergic activity is probably not responsible for the antidepressant effect of the drug, but that it may account for the sedative action. 32 references. (Author abstract modified)

**122253** Celesia, Gastone G.; Paulsen, Richard E. Department of Neurology, Neurological and Rehabilitation Hospital, 1954 E Washington Avenue, Madison, WI 53704 **Electroencephalographic activation with sleep and methohexital: comparative usefulness in the diagnosis of epilepsy.** *Archives of Neurology*. 27(4):361-363, 1972.

Two types of electroencephalographic activations were observed in 41 epileptics during sleep and the intravenous administration of methohexital sodium. Type 1 was the induction of specific paroxysmal discharges (SPD) in an otherwise normal tracing; it occurred in four patients during sleep and in two patients during methohexital treatment. Type 2 was an increase of 30% or more in the frequency of SPD in a preexisting abnormal tracing; it occurred in 20 patients during sleep and in 15 during methohexital administration. The Type 1 activation improved the sensitivity of electroencephalography as a diagnostic tool by 10%. However, this was achieved mainly with sleep, because whenever methohexital elicited a Type 1 response, a similar activation had already been obtained during sleep. It is concluded that methohexital is no more effective than sleep and has little value in the diagnosis of the epilepsies. 4 references. (Author abstract)

**122255** Chase, Thomas N. Neurology Unit, National Institute of Mental Health, 9000 Rockville Pike, Bethesda, MD 20014 **Serotonergic mechanisms in Parkinson's disease.** *Archives of Neurology*. 27(4):354-356, 1972.

Parachlorophenylalanine, a potent and specific depletor of brain serotonin, was administered to six patients with idiopathic parkinsonism. Although the cerebrospinal fluid levels of 5-hydroxyindoleacetic acid, the principal metabolite of serotonin, were substantially reduced, no consistent change in the cardinal signs of parkinsonism were observed in the patients following the drug treatment. These findings suggest that the alterations in the central metabolism of serotonin which attend Parkinsonism may reflect a secondary derangement which has no effect on the severity of the extrapyramidal signs characteristic of this disorder. 17 references. (Author abstract)

**122397** Gendreau, Paul; Sherlock, D.; Parsons, T.; McLean, R.; Scott, G.D.; Suboski, Milton D. Department of Psychology, Queen's University, Kingston, Ontario, Canada **Effects of methamphetamine on well-practiced discrimination conditioning of the eyelid response.** *Psychopharmacologia* (Berlin). 25(2):112-116, 1972.

Discrimination eyelid conditioning was conducted under inhibitory, neutral and facilitatory instructional sets in well practiced subjects following administration of methamphetamine, diazepam, or a placebo. Discrimination under methamphetamine was superior to the other two drug conditions, primarily as a result of decreased response levels to the unreinforced stimulus. There appeared to be no differences among drug conditions that were attributable to effects of the drugs on responsivity (nonspecific reactivity). 13 references. (Author abstract)

**122426** Downing, Robert W.; Rickels, Karl. Department of Psychiatry, University of Pennsylvania, 203 Piersol Building, 3600 Spruce Street Philadelphia, PA **Predictors of amitriptyline response in outpatient depressives.** *Journal of Nervous and Mental Disease*. 154(4):248-263, 1972.

A step search multiple regression procedure was applied to data obtained from 120 amitriptyline treated and 138 placebo treated depressed nonpsychotic outpatients in order to: 1) assess the magnitude of the drug's effect in an outpatient sample after the possibly contaminating effects of relevant sources of patient heterogeneity have been statistically removed and 2) identify predictors of response to amitriptyline, placebo, or both. Patient, illness, and treatment attributes deemed of possible relevance were employed as potential predictors. Patients were drawn from two city hospital clinics and the private practices of both general practitioners and private psychiatrists. The double blind drug trial employed was of four weeks duration, and improvement was assessed through both a patient global rating of change and a pretreatment-posttreatment difference in physician evaluated depressive psychopathology (PDS improvement). The drug effect was highly significant. Its magnitude was left unchanged for global improvement and slightly enhanced for PDS improvement when possibly contaminating influences of other predictors were statistically controlled through the regression procedure. For both improvement measures, drug placebo differences were greater in more severely than in less severely ill patients.

For all patients, irrespective of treatment agent, acute illness (six months) responded better to treatment than did long term illness. For the global measure there were indications that the more adequate personal and social resources, as well as the more favorable and realistic attitudes, of the higher socioeconomic class patient were instrumental in effecting greater drug placebo differences than occurred for patients of lower socioeconomic class affiliation. Finally, in replication of previous results, placebo patients were found to show greater global improvement when their physicians reported liking them less. 35 references. (Author abstract)

**122738** Hefez, A.; Lanyi, G. Psychiatry Department, Mazra Government Hospital, Israel **Neuropsychiatric manifestations of ketamine hydrochloride.** *Israel Annals of Psychiatry and Related Disciplines*. (Jerusalem). 10(2):180-187, 1972.

Ketamine hydrochloride was given to 14 nonpsychotic young adults in a narcoanalytic setup and the neuropsychiatric manifestations were studied in some detail. Two main phases of drug effect could be distinguished: a stuporous phase and a phase of partial inattention. In the first phase, all contact between subject and interviewer was severed, the subject being inattentive and noncommunicative. This was the state of analgesia. As the subjects became more attentive and communicative they could describe their experience under the drug. The most common manifestations were disturbance in the postural body image together with severe vertigo, nystagmus, hypotonia of limbs and parasympathetic over activity. Hallucinations were rare. The emotional abreaction which occurred points to the potential value of this drug in narcoanalysis. It appears that the drug is not psychotomimetic as the subjects were fully aware of their abnormalities and reality testing was not affected and that the site of action of the drug is rather diffuse in the thalamic and midbrain reticular formation. 11 references. (Author abstract modified)

**122883** Johnstone, M. Royal Infirmary, Manchester, England **Psychosis and ketamine.** *British Medical Journal* (London). 1(5797):442, 1972.

In a letter to the editor preoperative sedation which helped prevent dreams in restlessness associated with the recovery of consciousness in



adults after ketamine anesthesia is reported. A study of 100 patients, 17-47-years-old, requiring minor surgery is disclosed. Each patient received nitrazepam 10mg and droperidol 20mg orally. This mixture provided excellent sedation and sleep in virtually all patients not afflicted with pain. Anaesthesia was induced in each patient with an average dose of ketamine 250mg intravenously and maintained with supplementary doses of ketamine 100mg intravenously at approximately 10 minute intervals. The nitrazepam and droperidol premedication completely suppressed dreams and mental agitation associated with the recovery from ketamine anaesthesia in adults, and no special precautions were required to maintain silence and the lack of other disturbances during recovery. The premedication also prevented the muscular catatonia or rigidity which sometimes complicates ketamine anaesthesia. 2 references.

**124143** Kales, A.; Dement, W.C.; Allen, C.; Zarcone, V.; Howell, E.; Pivik, T. Milton S. Hershey Medical Center, UCLA Sleep Research and Treatment Facility, Los Angeles, California Effects of Placidyl on sleep of normal subjects. *Psychophysiology*. 9(1):93, 1972.

In a paper presented to the 11th Annual Meeting of the Association for the Psychophysiological Study of Sleep it is reported that in 2 separate sleep laboratory studies, the effects of Placidyl, 500mg, were compared to placebo administration. In each study, Placidyl 500mg (D) and placebo (P) were administered nightly as follows: PPPDDDDPPP. In both studies, there was considerable variability in baseline REM sleep expressed as a percentage of total sleep time, for nights 2 to 4. In the first study, drug administration had little effect on REM sleep. There was an average increase (28%) of REM sleep on the drug withdrawal nights. Total wake time was also slightly to moderately decreased with drug administration. In the second study there was a change (decrease of 16% from baseline) in REM sleep on the first drug night, while REM sleep approximated baseline on drug withdrawal. On the second and third drug nights, there was a substantial decrease in stage 4 sleep, as the only change. Because of the variability in baseline measurements and in the findings between the 2 studies, further studies are necessary to determine whether the drug clearly suppresses REM sleep or produces REM rebound on withdrawal. These studies with normal sleepers suggest that the drug

may be effective in inducing and maintaining sleep but this trend should be confirmed in long term studies using insomniac subjects. (Journal abstract modified)

**124254** Watson, Robert K.; Hartmann, Ernest; Schildkraut, Joseph J. University of Chicago, Chicago, Illinois Amphetamine withdrawal. *Psychophysiology*. 9(1):138, 1972.

In a paper presented to the 11th Annual Meeting of the Association for the Psychophysiological Study of Sleep day to day changes in the clinical depression that occurs during withdrawal from prolonged amphetamine abuse was studied in 4 subjects in relation to urinary catecholamine metabolites and altered sleep patterns. The depression, worse 2 to 3 days after the last dose, was significantly correlated with lowered excretion of 3-methoxy-4-hydroxyphenylglycol, which may provide the best index of lowered synthesis and metabolism of brain norepinephrine. Daily depression ratings were also significantly correlated with increased total amounts of REM sleep on both the preceding and following nights and with increased rapid eye movement density on the following night. (Journal abstract modified)

**125802** Sand, Patricia. Dept. of Rehabilitation Medicine, University of Washington, Seattle, WA 98105 Neuropsychological test performance before and after symptom removal in a child with Gilles de la Tourette syndrome. *Journal of Clinical Psychology*. 28(4):596-600, 1972.

An extensive neuropsychological test battery was administered to a child with Gilles de la Tourette syndrome (a childhood disorder with possible organic etiology). The battery first was administered while the behaviors characteristic of the syndrome were present; the same test battery was readministered seven months later while behavioral symptoms were controlled by medication. On both testings, this child showed superior intellectual functioning. He also showed atypically fast response times on both motor and problem-solving tests. His performance was not typical of that observed in children with significant cerebral injuries in frontal, temporal, parietal, or cerebellar areas. Obviously, however, other cerebral sites or functions that do not have as direct an influence on performance on the tests administered may be impaired. Marked reduction of behavioral symptoms occurred with administration of a neuroleptic (Haloperidol). Use of this drug appeared to

produce little or no disruption of this child's intellectual performance. 13 references. (Author abstract modified)

**125809** Maskin, Michael B.; Riklan, Manuel; Chabot, David. Dept. of Clinical Psychology, Fordham University, Bronx, NY 10458 A preliminary study of selected emotional changes in Parkinsonians on L-Dopa therapy. *Journal of Clinical Psychology*. 28(4):604-605, 1972.

Selected emotional changes in Parkinsonians on L-Dopa therapy were investigated. Twenty eight Parkinsonians were divided into three independent groups that consisted of pre, short-term, and long-term L-Dopa patients. A control group consisted of cardiac patients. All patients were equated with respect to age, length of illness, education, and L-Dopa dosage where applicable. Each patient was given the D, PA, and L scales of the Minnesota Multiphasic Personality Inventory (MMPI) (card form), and the Multiple Affect Adjective Check List (MAACL). Significant differences were found between pre and short-term L-Dopa patients and pre and control patients on the MMPI D scale. The results suggest that: 1) Parkinsonians show more depression than cardiac patients; and 2) during initial therapy L-Dopa may reduce this depression. 4 references. (Author abstract modified)

**125954** Kutschera, E. 755 Rastatt, Herrenstr.45, Germany /Treatment of restlessness and moodiness in children./ *Über die Behandlung von Unruhe- und Verstimmungszuständen bei Kindern.* *Medizinische Welt (Stuttgart)*. 23:39-40, 1972.

School age children often complain of inappetence, insomnia, intestinal upset and poor performance in class. Since the condition is frequently due to stress situations not amenable to immediate correction, medication may be indicated. The combination drug Truxaletten (registered trade mark) has quieted the vegetative nervous system, achieved psychological balance and harmonized the central nervous system. Treatment over several months resulted in better sleeping, eating and learning habits without side effects. In some cases Truxaletten were supplemented with cyproheptadine or pyridoxine. The former is an appetite stimulant, the latter a neurodynamic agent.

**125961** Kutner, S.Jerome; Brown, Willard L. Kaiser-Permanente Contraceptive Drug Study,

1515 Newell Ave., Walnut Creek, CA 94596 Types of oral contraceptives, depression, and premenstrual symptoms. *Journal of Nervous and Mental Disease*. 155(3):153-162, 1972.

A study was conducted to establish whether there is an association between oral contraceptives and depression. The sample consisted of 5151 female members of the Kaiser Foundation Health Plan who took a multiphasic examination. A significantly smaller percentage of patients reported symptoms of severe premenstrual depression among pill users as against never users. Patients taking combination pills showed significantly less severe premenstrual depression than sequential users. The higher the progestin dose, the less severe depression was measured by the Minnesota Multiphasic Personality Inventory (MMPI) Depression Scale, and scales on premenstrual mood. Past pill users expressed more severe depression than current pill users and never users. At least some of this depression began after discontinuation. The findings cast doubt on the hypothesis that the pill causes depression. Rather, there seems to be considerable premenstrual improvement, especially with combination drugs. 23 references. (Author abstract)

**125962** Kutner, S.Jerome; Brown, Willard L. The Kaiser-Permanente Contraceptive Drug Study, 1515 Newell Ave., Walnut Creek, CA 94596 History of depression as a risk factor for depression with oral contraceptives and discontinuance. *Journal of Nervous and Mental Disease*. 155(3):163-169, 1972.

In order to evaluate history of severe depression during or after pregnancy as a predisposition to depressive reactions with oral contraceptives, four measures of current depression were used. They consisted of the Minnesota Multiphasic Personality Inventory (MMPI) Depression scale and three questions mainly on premenstrual moods. The patients were members of the Kaiser Foundation Health Plan in Northern California. The data were collected during routine annual multiphasic health examinations in 1969. All four measures of present depression were significantly related to depressive history among current users of contraceptive pills. However, this was also true for past users and never users. Further, 441 patients with a history of depression generated no evidence for an association between use of the pill and abnormal depression. Only past users re-

ported more cases of severe premenstrual irritability than current users. The four measures of present depression were independent of dose of progestin used by 130 current users with a depressive history. Those patients (1,194) who discontinued the drug showed a significantly greater prevalence (11.7%) of history of severe depression during or after pregnancy than current users (9.3% of 1638 patients) or never users (8.9% of 1458 patients). On the other hand, 1420 past users revealed no association between number of months of pill use and depressive history. This research found no evidence of oral contraceptives aggravating a depressive history. But a history of depression in relation to pregnancy is related to discontinuance of the drug. The sequence of these events is unknown. 20 references. (Author abstract modified)

126197 Evans, J.I.; Lewis, S.A.; Tinker, M. Sleep Laboratory, Dept. of Psychiatry, Univ. of Edinburgh, Edinburgh, Scotland **Chlormethiazole, sleep, and drug withdrawal.** *Psychological Medicine* (London). 2(3):239-247, 1972.

The hypothesis that drug withdrawal delirium was related to a gross disturbance of sleep and a marked excess of REM sleep, suggested that drugs used to treat delirium should depress REM sleep. Chlormethiazole in doses over 1g was found to be effective in depressing REM sleep and in blocking the REM sleep rebound when sodium amylobarbitone (400mg) was stopped abruptly. 30 references. (Author abstract)

126221 Tucker, Gary J.; Quinlan, Donald; Harrow, Martin. Dept. of Psychiatry, Dartmouth Medical School, Hanover, NH 03755 **Chronic hallucinogenic drug use and thought disturbance.** *Archives of General Psychiatry*. 27(4):443-447, 1972.

Rorschach data relating to the thinking of hospitalized schizophrenic and nonschizophrenic drug abusers using mostly lysergic acid diethylamide (LSD), were compared to responses of similar hospitalized psychiatric populations of nondrug users. The results showed a clear tendency for drug users regardless of diagnosis to have more signs of increased intrusion of primitive drive material, higher penetration scores, and higher responsivity. There were indications of conceptual boundary disturbance in the drug users although their scores on this variable were influenced by their increased responsivity. These

select features of thinking and responsivity marked the drug users as different than other patients. The length of drug use over time was more strongly related to these thinking disturbances than variety or amount of drug use. 19 references. (Author abstract modified)

126229 Kazamatsuri, Hajime; Chien, Ching-piaco; Cole, Jonathan O. Boston State Hospital, 591 Morton St., Boston, MA 02124 **Therapeutic approaches to tardive dyskinesia: a review of the literature.** *Archives of General Psychiatry*. 27(4):491-497, 1972.

Therapeutic approaches to tardive dyskinesia described during the last decade are reviewed. A variety of drugs and treatment modalities have been reported to be effective in the short-term treatment of this syndrome. However, no definite effective treatment has been clearly shown to alleviate or reduce tardive dyskinesia symptomatology over a long time period. As long as psychiatrists must administer neuroleptic drugs to psychotic patients for many years, this syndrome will pose a continuing problem. Further search for effective treatments is vitally necessary as is investigation of ways of preventing this distressing iatrogenic complication. The need for standardized diagnostic criteria as well as objective evaluation methods is clear. In view of present ideas about the pathogenesis of this syndrome, the study of the drugs which may deplete dopamine or counteract dopaminergic activity appears most justified and promising. 101 references. (Author abstract modified)

126745 McCarroll, James E. Edgewood Arsenal, MD **The effects of scopolamine on the delayed recall of numbers tests.** Springfield, Va., NTIS, AD-743447, 1972, 12p. PC:\$3.00 MF:\$0.95.

A method for testing the impairment of short-term memory, is described, and experimental support of its usefulness is presented. The test is the delayed recall of numbers and consists of the recall of single digit to progressively longer multidigit numbers at three short intervals per number. The test was evaluated for the ability of recall of digits forward and backward to measure memory deficits caused by scopolamine. It was determined that the digits forward test is sufficient to observe effects on memory and that memory deficit is dose dependent for three doses of scopolamine. (Author abstract)



**127517 Alexander, Leo.** Department of Psychiatry, Tufts University Medical School, Boston, MA **Mind and body in biological psychiatry.** *Biological Psychiatry.* 5(3):225-238, 1972.

The bodily influences upon the mind, and the mental influences upon the body, which are applied in the practice of biological psychiatry are discussed. The four chief areas of interaction are: 1) bodily nonverbal support through mild euphoriant medication or placebo; 2) stressful bodily challenges, such as by stimulating or hallucinogenic drugs; 3) extinction of conditioning and strengthening of the unconditional responsiveness, such as by electroshock therapy or specific antipsychotic drugs; 4) new conditioning of bodily functions by verbal means, such as by psychotherapy, including hypnosis. 20 references. (Author abstract)

**127857 Gottschalk, Louis A.; Kaplan, Stanley A.** Department of Psychiatry and Human Behavior, University of California, Irvine, CA **Chlordiazepoxide plasma levels and clinical responses.** *Comprehensive Psychiatry.* 13(6):519-527, 1972.

A study of the relationship of chlordiazepoxide blood levels to changes in anxiety, hostility, and other psychological levels is reported. In a double-blind, crossover study involving a single oral dose of chlordiazepoxide (25mg) on 18 chronically anxious subjects, anxiety, hostility outward, and ambivalent hostility scores tended to decrease over the 50 minute observation period when Ss were on chlordiazepoxide as compared to a placebo. But a statistically significant decrease in anxiety scores during this period occurred only in those 11 subjects whose chlordiazepoxide plasma levels exceeded 0.70micrograms/ml. The decrease in hostility outward, hostility inward, and ambivalent hostility scores, when these Ss were on chlordiazepoxide, did not reach a convincing level of significance. Chlordiazepoxide plasma levels of all 18 Ss correlated with scores on anxiety, ambivalent hostility and achievement strivings. Chlordiazepoxide blood levels of the 11 Ss whose levels exceeded 0.70micrograms/ml also correlated with hostility outward scores and hostility inward scores. Implications of these findings are discussed as well as directions for future research. 36 references. (Author abstract modified)

**129830 Tinklenberg, Jared R.; Kopell, Bert S.; Melges, Frederick T.; Hollister, Leo E.** Palo Alto V.A. Hospital, Bldg. 4, Room C143, 3801 Miranda Ave., Palo Alto, CA 94304 **Marihuana and alcohol: time production and memory functions.** *Archives of General Psychiatry.* 27(6):812-815, 1972.

In a double-blind study, time production tasks and clinical tests of memory function were performed by 15 normal subjects given placebo and social doses of alcohol (ethyl alcohol) and marihuana, calibrated to (-)-delta1-tetrahydrocannabinol. Using subjects as their own controls, it was found that, compared to alcohol and placebo, marihuana induced a significant under production of time intervals suggesting an acceleration of the internal clock. At these dose levels, there were no significant changes in memory function, but during marihuana intoxication some consistent trends toward greater impairment of tracking information over time were noted. 21 references. (Author abstract)

**129831 Kopell, Bert S.; Tinklenberg, J. R.; Hollister, L. E.** Dept. of Psychiatry, Stanford Univ. School of Medicine, Stanford, CA 94305 **Contingent negative variation amplitudes: marihuana and alcohol.** *Archives of General Psychiatry.* 27(6):809-811, 1972.

In a double-blind study, the amplitude of the contingent negative variation (CNV) was assessed in 12 normal men given placebo and quantified social doses of 1-delta 9-trans-tetrahydrocannabinol (THC) and alcohol (ethyl alcohol). Using subjects as their own controls, it was found that THC selectively enhanced the amplitude as compared to placebo while alcohol depressed it. 21 references. (Author abstract)

**129834 Arnold, L. Eugene; Wender, Paul H.; McCloskey, Keith; Snyder, Solomon H.** Dept. of Psychiatry, Ohio State University, Columbus, OH **Levoamphetamine and dextroamphetamine: comparative efficacy in the hyperkinetic syndrome: assessment by target symptoms.** *Archives of General Psychiatry.* 27(6):816-822, 1972.

In a nine week double blind crossover comparison of dextroamphetamine, levoamphetamine (Cydral), and placebo with 11 hyperkinetic children, effects were assessed by an established teacher rating scale, a parent rating scale, and a new tool, weekly quantification of parent-selected

target symptoms. Both active drugs were significantly more effective than placebo. Dextroamphetamine seemed consistently superior to levoamphetamine, though not to a significant degree (on this size sample). Levoamphetamine seemed slower starting, requiring three weeks to show significant benefit on target symptoms, whereas dextroamphetamine showed nearly its maximum benefit the first week. Levoamphetamine seemed better for hyperactivity and aggressiveness than for inattentiveness, whereas dextroamphetamine seemed equally beneficial for all three. These data are consistent with the possibility that therapeutic effects of amphetamine on hyperkinetic children are mediated, at least in some, by dopaminergic systems. 13 references. (Author abstract)

130354 Vroon, P. A.; van Boxtel, A. Psychological Laboratory, University of Utrecht, Varkenmarkt 2, Utrecht, Netherlands Testing some implications of the sensory physiological model of the time sense. *Psychologische Forschung* (Berlin). 35(2):81-92, 1972.

Some implications of the pulse generator model of time perception are tested. In the case of serial production of an interval a lengthening effect occurs. Generally, this phenomenon is explained by assuming that the time keeper is driven by the state of general physiological activation which decreases in the course of the task. When EEG activity was recorded during the time estimation process, a lengthening effect occurred, but there was no correlation between the reproduction times and the means of the EEG spectra. In another experiment a placebo or methamphetamine was administered in the expectation that the drug would produce a high and constant activation. Since no differences were noted in regression of time estimation with or without the drug, the model's predictive quality could not be confirmed. It is suggested that the nature of the effect should be studied within the framework of the cognitive theory of time experience which offers various starting points in this respect. 24 references. (Author abstract modified)

131610 Lemberger, Louis; Weiss, James L.; Watanabe, August M.; Galanter, I. Marc; Wyatt, Richard J.; Cardon, Philippe V. Lilly Laboratory for Clinical Research, Marion County General Hospital, Indianapolis, IN 46202 Delta-9-

tetrahydrocannabinol: temporal correlation of the psychologic effects and blood levels after various routes of administration. *New England Journal of Medicine*. 286(13):685-688, 1972.

A temporal correlation of the psychologic effects and blood levels after various routes of administration of labeled delta9-tetrahydrocannabinol (delta9-14C-THC) is presented. Delta9-14C-THC was administered to 12 long-term marihuana smokers intravenously, orally, or by inhalation, and the drug's disposition, excretion, and psychologic effects were compared. Over 90% of the dose was absorbed after oral administration. The psychologic effects and plasma levels of the THC metabolites peaked at three hours. After inhalation, the peak psychologic high ranged from 10 to 140 minutes; the average high of 70 minutes, correlated well with the peak plasma levels of the THC metabolites. The percentage of administered radioactive dose excreted in urine during the first day was similar after oral and intravenous routes, but the proportion of radioactivity recovered from feces (seven days) exceeded that of the day one urine output. The fact that the psychologic effects in response to pharmacologic doses of ingested or inhaled THC were temporally correlated with plasma levels of the metabolites of the drug supports the hypothesis that these metabolites are active compounds. 18 references. (Author abstract modified)

131961 Overall, John E.; Henry, B. W. Department of Neurology and Psychiatry, University of Texas Medical Branch, Galveston, TX 77550 Decisions about drug therapy. III. Selection of treatment for psychiatric inpatients. *Archives of General Psychiatry*. 28(1):81-89, 1973.

Drug treatment decisions by experienced psychiatrists in a medical school setting are examined through analysis of symptom rating profiles for patients treated with different psychotherapeutic drugs. Multidimensional analysis revealed that the several drugs scaled along a major continuum extending from antipsychotic to antidepressant indications, with antianxiety indications in the middle region. Drugs within the major chemical classes were also found to be used selectively according to clinical conceptions of the degree of tranquilizing or sedative components in their total therapeutic effects. Clinical profiles representing the indications for antidepressant, antianxiety, and antipsychotic drugs were derived. 11 references. (Author abstract modified)

**132785** Ehrenstein, W.; Schaffler, K.; Muller-Limmroth, W. Institut für Arbeitsphysiologie der Technischen Universität, 8 Munich, Barbarastrasse 16, Germany /The effect of oxazepam on interrupted day sleep after night work./ Die Wirkung von Oxazepam auf den gestörten Tagschlaf nach Nachtschichtarbeit. *Arzneimittel-Forschung (Aulendorf)*. 22(2):421-427, 1972.

Eight nurses who were working on night shifts were studied for the effect of oxazepam on their sleep pattern during the day. Without pharmacological intervention, sleep lasted for at least 3 hours, although duration varied. The deep sleep of stages 3 and 4 was largely observed in the first hours regardless of day or night; shortening the day sleep resulted in the loss of sleep stages 1 and 2. Rapid eye movement (REM) latency was shortened in day sleep; this is seen as the failure of the vegetative rhythm to adapt to the changed activity rhythm making it difficult to go back to sleep after interruption. The effect of oxazepam was to prolong day sleep by 21%; stages 3 and 4 and REM sleep were increased to equal night sleep values. Stage 1 and 2 of orthodox sleep were increased in oxazepam day sleep but did not reach the values of night sleep. REM latency and duration of sleep cycles in oxazepam day sleep resembled normal day sleep. Moderate muscle relaxing effects were observed with the use of oxazepam. 32 references. (Journal abstract modified)

**132950** Itil, T.M.; Saletu, B.; Marasa, J. Missouri Institute of Psychiatry, University of Missouri School of Medicine, St.Louis, MO 63139 Digital computer analyzed sleep electroencephalogram (sleep prints) in predicting anxiolytic properties of clorazepate dipotassium (Tranxene). *Current Therapeutic Research*. 14(8):415-427, 1972.

The effects of placebo, diazepam, and clorazepate dipotassium on behavior and on the quantitatively analyzed sleep electroencephalogram (EEG) were investigated in a double-blind study involving 11 normal subjects. Clinical findings based on psychosomatic and neurological ratings were not helpful in discriminating the active drugs and placebo from one another. The sleep onset (sleep threshold) was earliest and the awakening threshold was highest after clorazepate dipotassium (Tranxeme), followed by diazepam and placebo. Statistical analysis of the EEG digital computer period analysis measurements during the total sleep and rapid eye movement (REM) times demonstrated that both diazepam and clorazepate dipotassium induced an increase

of average frequency, frequency deviation and fast beta activity, while the alpha activity and amplitudes decreased. These changes are known to be characteristic for minor tranquilizers. Diazepam and clorazepate dipotassium also significantly altered the all night sleep process: deep sleep stages decreased, while light sleep stages increased. REM activity was attenuated, although not significantly. By applying several statistical procedures, it was found that both active drugs could be differentiated from placebo but not from each other. This study demonstrated that quantitatively analyzed EEG and sleep are useful methods of predicting the clinical effectiveness of psychotropic drugs in early evaluations, particularly of anxiolytics. 40 references. (Author abstract)

**133011** Stanciu, Eugenia; Csiky, K.; Csiky, Cs. Clinica de Psihiatrie, Tirgu Mures, Rumania /Notes on a case of tics (Gilles de la Tourette's syndrome) treated by Haloperidol./ Observatii asupra unui caz de boala ticurilor (Sindromul Gilles de la Tourette) tratat cu Haloperidol. *Neurologia, Psihiatria, Neurochirurgia (Bucuresti)*. 17(1):43-48, 1972.

The therapeutic effects of Haloperidol were studied in the treatment of Gilles de la Tourette syndrome in an 8-year-old child. The patient suffered from tics localized in the upper part of the body, difficulty of speech (explosive uttering of some words), and coprolalic tendencies. The symptoms appeared at the age of 6, and became more acute after an attack of influenza. Tests revealed normal I.Q., but the patient had some difficulty in concentrating. He displayed affective lability on the background of affective indifference. The boy had difficulties in eating, but his sleep was peaceful and calm. The EEG traced a line with many artifacts, without a stable basic rhythm. A rapid irregular rhythm followed administration of 2ml of Baytinal. Seven cumulated electric shocks were applied over the span of 4 days. A mild decrease of tics was observed. Treatment with 3mg daily of Haloperidol in a 2% solution accompanied by 6mg of Diazepam and Romparkin resulted in marked improvement. After three weeks of treatment, the tics became barely noticeable, and the patient was released. He continued on 1.5mg daily dose of Haloperidol. The child continued to be a good student at school. The favorable response to the treatment with Haloperidol justifies the hope of finding a



therapeutic solution, provided the diagnosis is established and the treatment is started in time. 24 references.

**133347** Schneider, E.; Jacobi, P.; Maxion, H.; Fischer, P.-A. Psychiatr.u.Neurol.Universitäts klinik, Heinrich-Hoffmann Str.10, 6 Frankfurt/Main-Niederrad, West Germany /Neuropsychological and electromyographic studies on the short-term psychotropic effect of L-dopa./ Neuropsychologische und elektromyographische Untersuchungen zur psychotropen Kurzzeitwirkung von L-Dopa. *Pharmakopsychiatrie Neuropsychopharmakologie* (Stuttgart). 5(3):120-128, 1972.

The effect of L-dopa infusions (75mg) on psychomotor function and affective state was investigated in 12 Parkinson patients. Psychometric and electromyographic tests were conducted both for a control period (30 to 180 min after the end of infusion) and subsequently. The results revealed that, aside from the slight improvement of simple motor function and of rigor, a specific psychotropic effect occurred, expressed as an improvement in visual motor coordination and in an affective stimulation syndrome. These changes cannot be attributed to a secondary reaction resulting from the patient's feeling of improvement in movement. The emotional effects appear to be independent of the improvement in akinetic events. Pfister's colored pyramid test was used to evaluate reception and processing of stimuli. 54 references. (Author abstract modified)

**134129** Reiss, David; Salzman, Carl. Section on Experimental Group and Family Studies, Adult Psychiatry Branch, National Institute of Mental Health, Bethesda, MD **The resilience of family process: effect of secobarbital I. Method and findings.** (Unpublished paper). Bethesda, MD, NIMH, 1972, 31p.

Secobarbital was administered to offspring of family threesomes to test the resiliency of family problem-solving processes to psychological changes in one of its members. Twenty four families were used, half receiving 175mgm of secobarbital and the other half receiving a placebo on a double-blind basis. Family problem-solving and speech patterns were measured by a card sorting experimental procedure and computer analysis of automatically transcribed voice records. The drug produced no objective change in the problem-solving of the offspring or his family but

produced marked changes in the family's speech patterns. The findings suggest that speech changes may have been compensatory, preventing a sustained change in family problem-solving process in response to the drug. (Author abstract)

## 15 TOXICOLOGY AND SIDE EFFECTS

**118897** Frand, Uri I.; Shim, Chang S.; Williams, M.Henry., Jr. Department of Medicine and Unit for Research in Aging, Albert Einstein College of Medicine, Bronx, NY **Heroin-induced pulmonary edema: sequential studies of pulmonary function.** *Annals of Internal Medicine*. 77(1):29-35, 1972.

The use of heroin is associated with pulmonary abnormalities resulting from the chronic effects of heroin addiction, the effects of heroin overdose, and acute pulmonary edema. Chronic heroin addiction results in a slight decrease of vital capacity and a mild to moderate decrease of diffusing capacity. Heroin overdose is characterized clinically by hypoventilation and coma and functionally by moderately severe hypoxemia, mild reduction of vital capacity, and normal diffusing capacity. Heroin pulmonary edema is extensive and the acute effects on lung function are similar to those of other types of pulmonary edema: profound hypoxemia, right to left physiologic shunt, metabolic and respiratory acidosis, decreased lung volumes, decreased compliance, and normal expiratory flow rates. The diffusing capacity, however, is only moderately decreased. Clinical, radiologic and arterial blood gas improvements are rapid and complete within a few days. Vital capacity and dynamic compliance improve slowly and diffusing capacity remains unchanged for several weeks. 27 references. (Author abstract)

**118898** Jacobson, Eric S. Denver Department of Health and Hospitals, Denver, CO **Fatal immune thrombocytopenia induced by ethchlorvynol.** *Annals of Internal Medicine*. 77(1):73-76, 1972.

A case of recurring fulminant thrombocytopenia is described. Three of the five documented thrombocytopenic episodes are known to have been preceded by ingestion of ethchlorvynol (Placidyl). The last ingestion was followed by an episode that resulted in the death of the patient. Hematologic values were normal between episodes. Various drugs that appeared to be related temporally to the patient's crises were screened for antiplatelet activity in vitro in the presence of the

patient's serum. Ethchlorvynol inhibited clot retraction; no other agent had this effect. The author concludes that the thrombocytopenia was induced by this drug. This is believed to be the first case of thrombocytopenia to have been induced by ethchlorvynol. 18 references. (Author abstract)

**118899** Greenblatt, David J.; Shader, Richard I. Psychopharmacology Research Laboratory, Massachusetts Mental Health Center, Boston, MA **The clinical choice of sedative-hypnotics.** *Annals of Internal Medicine.* 77(1):91-100, 1972.

The clinician is faced with a wide assortment of available sedatives, hypnotics, and tranquilizers, as well as continuous pressure from patients, the popular media, and the pharmaceutical industry, encouraging and demanding the use of these drugs. Under these influences the rational use of sedatives and hypnotics is not easily achieved. Current evidence favors the benzodiazepine derivatives, although they are far from ideal. Flurazepam allows physiologic sleep and has a low potential for abuse. Chlordiazepoxide, diazepam, and oxazepam are effective antianxiety agents. Suicide is virtually impossible with the benzodiazepines, and these agents probably do not interact with oral anticoagulants. Obviously, sedatives and hypnotics are best reserved for situations in which the possible benefit for the patient outweighs the risk associated with the use of the drug. 138 references. (Author abstract)

**119028** Silver, Dee E.; Sahs, Adolph L. Department of Neurology, University of Iowa College of Medicine, Iowa City, Iowa 52240 **Livedo reticularis in Parkinson's disease patients treated with amantadine hydrochloride.** *Neurology.* 22(7):665-669, 1972.

Livedo reticularis, which manifests itself in the form of a mottled, fishnet-like change in the skin of the extremities, appeared in 29% of a group of 50 patients with Parkinson's disease who had been treated with amantadine hydrochloride. The condition was observed in both men and women at different intervals following the initiation of therapy; about one half of these patients developed associated initial or concurrent ankle edema. In seven patients in whom the drug treatment was discontinued, the mottling and edema disappeared. There were no other symptoms, and the laboratory data on all patients were normal except for the occurrence of elevated

cryofibrinogens in three of the patients. Histologic studies of the skin and muscle in seven patients revealed no abnormalities. The appearance of livedo reticularis may be based on the release of dopamine and other catecholamines by amantadine and by the production of local vasoconstriction. The long-term effects of this vasoconstriction have not been determined. 8 references. (Author abstract modified)

**119039** Camer, Stephen J.; Ching, N.; Giannelli, S.; Nealon, T.F., Jr. St.Vincent's Hospital and Medical Center, New York, NY **Inappropriate response of drug addicts to cardiothoracic surgery.** *New York State Journal of Medicine.* 72(13):1718-1722, 1972.

Eleven heroin addicts admitted on an emergency basis to St.Vincent's Hospital in New York City were compared with 30 nonaddict patients who were admitted during the same time period for traumas of comparable severity. The addicts were admitted for stab wounds, rib fractures, and, in one case, empyema; all were subjected to thoracic surgery during the course of treatment and the complications which followed the surgery were noted. As compared with the nonaddict control patients, 30% more of the addicts suffered from pulmonary edema and heart failure, 33% more suffered from empyema, 27% more suffered from wound infection and dehiscence, and 20% more suffered from pneumonia. It is concluded that the heroin addict does not tolerate trauma, surgical or otherwise, as well as the average hospital patient. Although a particular cause for this is not evident, a yet unrecognized defect is likely. 7 references.

**119969** McAndrew, John B.; Case, Quentin; Treffert, Darold A. Winnebago State Hospital, Winnebago, Wisc. 54985 **Effects of prolonged phenothiazine intake on psychotic and other hospitalized children.** *Journal of Autism and Childhood Schizophrenia.* 2(1):75-91, 1972.

Four related studies of infrequently recognized side effects (weight changes, tardive dyskinesia, impaired learning, and ocular changes) of prolonged phenothiazine intake by children with severe disorders of behavior are presented and discussed. The retrospective investigation involving 86 hospitalized boys and 39 girls, 4 to 16 years of age, covered a 5 year period. Weight gains in 29 out of 30 patients were significantly related to thioridazine intake. Tardive dyskinesia occurred

in 10 children receiving high doses of phenothiazines over prolonged periods. Discontinuation of thioridazine prompted accelerated learning in 3 boys as evidenced by their periodically measured Stanford achievement test scores. Lens stippling occurred in 2 patients whose cumulative chlorpromazine intake was below 200 grams, and in 3 with higher doses of phenothiazines. Judicious use of phenothiazines in long-term treatment of mentally ill children may be facilitated by routine individual double blind procedures involving patients as their own controls. 41 references. (Journal abstract)

**120200** Taylor, P. A.; Cotton, P. B.; Towey, R. M.; Gent, A. E. St. Thomas's Hospital, London S.E. 1, England **Pulmonary complications after oesophagogastrosopy using diazepam.** *British Medical Journal* (London). 1(5801):666, 1972.

The cases are reported of 2 patients out of a series of 1000 patients undergoing fiberoptic oesophagogastrosopy with diazepam who subsequently developed pulmonary complications. Both patients were old and debilitated. The problem at fiberoendoscopy is further complicated by the use of topical pharyngeal anesthesia and the fact that the endoscope may facilitate vomiting or regurgitation of retained gastric contents present despite prolonged starvation. There is a growing tendency to use diazepam sedation in unstarved patients for minor surgical procedures. However, in some cases, full controlled general anesthesia may prove safer. 6 references.

**120269** Ullman, Kenneth C.; Groh, Robert H. Dept. of Psychiatry, Georgetown Univ. Hospital, Washington, DC 20007 **Identification and treatment of acute psychotic states secondary to the usage of over-the-counter sleeping preparations.** *American Journal of Psychiatry*. 128(10):1244-1248, 1972.

Within eight months, 36 patients seen at the Washington Hospital Center, Washington, D.C., presented the problem of differentiating between a toxic psychosis caused by ingestion of over the counter sleeping medications containing scopolamine and a schizophrenic episode. Clinical evaluations, case histories, and thin-layer chromatography were used to identify these patients. Urinalysis revealed the presence of at least two ingredients of over the counter sleeping medications in 10 patients. Intramuscular injections of physostigmine salicylate reversed the toxic

psychosis presumed to be the result of the scopolamine content in these preparations. 13 references. (Author abstract)

**120729** Fann, William E.; Davis, John M.; Janowsky, David S. Department of Psychiatry, Duke University Hospital, Durham, NC 27710 **The prevalence of tardive dyskinesias in mental hospital patients.** *Diseases of the Nervous System*. 33(3):182-186, 1972.

Patients treated for long periods with phenothiazines are subject to an extrapyramidal syndrome called tardive dyskinesias. Previous double-blind studies have shown that patients frequently relapse when their antipsychotic drug is discontinued. Long-term treatment may be necessary for control of the psychosis, yet it may make the patient liable to a possibly permanent tardive dyskinetic type neurological syndrome. A study was carried out to determine whether this syndrome occurs in patients treated in two mental hospitals in middle Tennessee. Of the VA and State Hospital population surveyed, 36% of chronic patients were found to manifest the tardive dyskinesia syndrome. 37 references.

**120733** Marshall, Myron H. no address **Persistent dyskinesias in drug users.** *Journal of the American Medical Association*. 221(1):86-87, 1972.

In a letter to the editor, persistent dyskinesias or abnormal movements is reported in adolescent drug abusers. Three case reports are given. Also, in postmortem examinations, cell degeneration was found in 27 of 28 adults with persistent dyskinesias subsequent to the use of psychoactive compounds, but in only five of 28 controls.

**120823** Campbell, James M.; Gralnick, Alexander. High Point Hospital, Port Chester, NY 10573 **Pigmentary retinopathy associated with thioridazine administration.** *Behavioral Neuropsychiatry*. 3(9-10):14, 24, 1972.

The occurrence of pigmentary retinopathy despite the administration of low doses of thioridazine over a short period is reported in the case history of a schizophrenic female. It is suggested that: (1) pigmentary retinopathy following Thioridazine administration may occur with lower doses than heretofore thought, but more likely with doses exceeding 800mg. daily. However, it may occur in a rather brief period of time. (2) It would seem important to examine the retina be-



fore, and certainly during the administration of Thioridazine. (3) Allowing for individual differences, the administration of Thioridazine in any sizeable daily amount, and more especially in doses over 800mg, should be a signal for special attention to eye symptoms caused by retinal pigmentation. (4) The retinal pathology would seem to be at least patially reversible. 9 references. (Author abstract modified)

**120977** Rothstein, Emil. Brockton, MA Rifampin with disulfiram. *Journal of the American Medical Association*. 219(9):1216, 1972.

The case of a patient with a 25 year history of alcoholism and also liver disease and tuberculosis, being treated with rifampin, isoniazid and disulfiram is discussed. It is concluded that the combination of rifampin, isoniazid and disulfiram was nontoxic, after a period of four months, despite documented liver disease in the fairly recent past.

**121175** Rinne, U.K.; Sonninen, V.; Siirtola, T. Department of Neurology, University of Turku, 20520, Turku 52, Finland Treatment of Parkinson's disease with amantadine and L-dopa. *European Neurology (Basel)*. 7(4):228-240, 1972.

Treatment of Parkinson's disease with amantadine and L-dopa was studied in 82 patients. A double-blind cross-over trial with 38 patients showed a significant benefit with 200mg of amantadine daily. During non-blind treatment with 300mg of amantadine for 2-4 months 60% of the patients showed moderate or marked overall improvement. The results were independent of age, duration, or severity of the disease or previous thalamotomy. During combined treatment, an additive effect of L-dopa, but not that of amantadine, was demonstrated, showing that the therapeutic effect of L-dopa is superior to that of amantadine. Furthermore, an increased number of clinical side-effects, especially nausea and vomiting, were found during combined treatment. Moreover the response to L-dopa could not be predicted with amantadine. Amantadine treatment did not induce changes in the concentration of homovanillic acid (HVA) and 5-hydroxyindoleacetic acid (5-HIAA) in the cerebrospinal fluid (CSF) although there is strong evidence of a monoamine-releasing effect of amantadine on experimental animals. 24 references. (Author abstract)

**121212** Blaine, Jack D.; Cohrsen, John J. no address LSD teratogenicity and cytogenetics. *Drug Forum*. 1(2):187-193, 1972.

An overview is presented of studies of genetic and fetal damage associated with the usage of illicit drugs, especially LSD. Infants born of mothers with complex gestational histories, including illicit LSD consumption, have shown skeletal abnormalities and retroperitoneal fibrosis. In contrast, studies have shown the absence of teratogenic effects in offspring of mothers who ingested illicit LSD during the first trimester. To date there is no report of congenital malformations in human offspring exposed to pure LSD. Animal experimentation with pure and illicit drugs has not clarified the controversy over the teratogenic potential of LSD. Hamsters showed a wide variety of congenital malformations from a single subcutaneous injection of LSD at doses up to 240micrograms/kg either at the beginning of gestation or during organogenesis. Abundant and controversial literature has also accumulated in the area of LSD and genetic or chromosomal damage. Approximately 66% of the cytogenetic studies reported exposed cell tissue cultures to LSD and reported some degree of induced chromosomal aberrations. Other cytogenetic studies ascertained the effect of LSD on leukocytes obtained from subjects exposed to pure LSD (33%) or to illicit LSD (67%). Fourteen percent of the subjects in the pure LSD group had chromosomal aberrations above control levels in contrast to 49% in the illicit LSD group. The genetic significance of somatic cell induced chromosome damage is unknown. These same changes have been produced by commonly used levels of diagnostic X-rays, common viruses, and many chemicals including aspirin, nicotine, antibiotics, antihistamines, and caffeine. 28 references.

**121218** Frand, Uri I.; Shim, Chang S.; Williams, M.Henry, Jr. Department of Medicine, Albert Einstein College of Medicine, Bronx, NY Methadone-induced pulmonary edema. *Annals of Internal Medicine*. 76(6):975-979, 1972.

Two healthy young adults without previous history of drug use were admitted to the Bronx Municipal Hospital Center after methadone overdose resulted in coma, cyanosis, hypoventilation, and pulmonary edema. They responded well to treatment with intermittent positive pressure breathing (oxygen) and intravenous injection of nalorphine

hydrochloride; however, they remained obtunded for 6-12 hours after the initiation of therapy. The pulmonary edema cleared clinically within the first day, the chest X-ray was normal within 4 days, and the arterial blood gases within 1 week. The abnormal pulmonary function tests, mainly low vital capacity and dynamic compliance, improved but remained abnormal. The edema fluid obtained from one patient had a protein composition similar to plasma. Like heroin pulmonary edema, the pathogenesis of methadone pulmonary edema is not clear. Hypoventilation, acting through profound hypoxemia, and a direct toxic effect on the alveolocapillary membrane, causing increased capillary permeability, are suggested as possible mechanisms. 37 references. (Author abstract)

**121288** Doshi, Jayant; Luisada-Opper, Anita; Leevy, Carroll, M. Division of Hepatic Metabolism and Nutrition, College of Medicine and Dentistry of New Jersey at Newark, Newark, NJ 07103 Microsomal pentobarbital hydroxylase activity in acute viral hepatitis. Proceedings of the Society for Experimental Biology and Medicine. 140(2):492-495, 1972.

A radioisotope dilution technique was used in estimating the microsomal pentobarbital hydroxylase activity in liver biopsy specimens from patients in various stages of acute uncomplicated viral hepatitis. Results indicate that liver cell necrosis and regeneration may markedly alter drug-metabolizing enzymes independent of drug therapy. With regard to the mean pentobarbital hydroxylase activity in the biopsy specimens, no differences were noted between those from normal controls and those with localized acidophilic necrosis or focal inflammation. A significant decrease in enzyme activity occurred with subacute autolytic necrosis and a four fold increase was noted during active regeneration; the latter change was reflected in the proliferation of Kupffer cells and an increase in in vitro hepatic DNA synthesis. There is a variable relationship between pentobarbital hydroxylase activity, abnormal liver functioning, and morphologic evidence of hyperplasia of the endoplasmic reticulum. 19 references. (Author abstract modified)

**121477** Ray, I. Union Hospital, Yorkton, Saskatchewan, Canada Side effects from levodopa. Canadian Medical Association Journal (Toronto). 107(1):19, 1972.

The case study of a 47-year-old man with clinical manifestations of acute paranoid psychosis who had a history of long standing parkinsonism and had undergone stereotaxic surgery is presented. He was admitted on an emergency basis to Yorkton Psychiatric Centre. Treatment with levodopa was begun on December 14, 1971. Before admission he had been taking 1000mg of levodopa five times a day. One evening he went to a cafe. There he thought that others were looking at him. At 9:30, he visited his brother and tried to hide in a closet, saying that someone was going to kill him. On admission, he showed no evidence of alcohol intoxication, but had paranoid ideas. He was given 100mg of chlorpromazine. Treatment consisted of diazepam 5mg intramuscularly once a day, then 5mg orally twice a day; trimipramine 75mg at bedtime; and levodopa (which had been withheld for 36 hours) 500mg four times a day. He improved on this regimen and was discharged after 10 days. 2 references.

**121478** De Jager, N.S.T.; Boyd, N.F.; Ginsburg, A.D. Division of Hematology, Department of Medicine, Queen's University, Kingston, Ontario, Canada Attempted abortion by the use of bishydroxycoumarin. Canadian Medical Association Journal (Toronto). 107(1):50, 53, 1972.

The case study of a 33-year-old housewife who used an oral anticoagulant in an attempt to induce abortion is presented. She presented acute onset of a generalized bleeding disorder, and a clinical history and physical findings that were compatible with a diagnosis of acute disseminated intravascular coagulation. A plasma bishydroxycoumarin level far in excess of the normal range, which returned to normal levels during the hospital stay, established that she had recently ingested the drug although she vehemently denied taking it. Her knowledge of the effects of the drug stemmed from two episodes of heavy vaginal bleeding which had been ascribed to the drug. It is felt that in this way she sought to rid herself of a pregnancy which she believed would disrupt her life. 9 references.

**121578** Ringrose, C.A. Douglas. 836 Professional Building, 10830 Jasper Avenue, Edmonton, Alberta, Canada The hazard of neurotropic drugs in the fertile years. Canadian Medical Association Journal (Toronto). 106(10):1058, 1972.

With the great increase in the number of neurotropic drugs and their consumption, repetitions

of the thalidomide disaster seem inevitable. Three cases are presented of women who took drugs while they were pregnant. The first patient, aged 29, took diazepam (Valium) and propoxyphene hydrochloride (Darvon). The infant manifested congenital absence of the left forearm and the radial two digits. There was syndactyly of the ulnar three digits. The left femur was hypoplastic and syndactyly of the left fourth and fifth toes was present. The second patient was 22. Sixteen days after conception, she received propoxyphene hydrochloride and meprobamate for symptomatic relief of a low back strain due to a car accident. The child had multiple anomalies including omphalocele, defective anterior abdominal wall, defect in the diaphragm, and congenital heart disease. The third patient, 22 years old, was an epileptic and had taken diphenylhydantoin (Dilantin) and phenobarbital for two years prior to conception. The pregnancy went to term and the infant died in the early neonatal period. An autopsy showed many anomalies. 3 references.

**121581** Spensley, James; Rockwell, Don A. Department of Psychiatry, University of California Davis, School of Medicine, Davis, CA 95616 **Psychosis during methylphenidate abuse.** New England Journal of Medicine. 286(16):880-881, 1972.

Methylphenidate (Ritalin) abuse potential is discussed with regard to two case histories. A psychotic state which is similar to amphetamine psychosis may develop. This state may be marked by paranoia, violent behavior, hallucinations, delusions, and a withdrawal state of mild proportions. Psychostimulant abusers often experience profound depression upon withdrawal. Methylphenidate has been used for the control of hyperkinetic children. Cases of abuse of the drug among athletes through intravenous injection indicate an increase in motor response. Removal of such a drug from the market would drive abusers to other stimulants. 26 references.

**121621** Hussain, M.Z.; Harinath, M.; Murphy, J. Department of Public Health, Victoria Union Hospital, 1200 24th Street West, Prince Albert, Saskatchewan, Canada **Tranquillizer-induced galactorrhea.** Canadian Medical Association Journal (Toronto). 106(10):1107-1108, 1972.

A case is reported in which a tranquilizer was followed by nonpuerperal galactorrhea without amenorrhea and caused a major hindrance in the pharmacotherapy of the patient. The patient was

17 years old with a 3-year history of hearing voices and seeing flashes of colored lights before her eyes. These symptoms were becoming progressively worse. Both thioridazine (50mg three times a day) and trifluoperazine (2mg three times a day) produced lactorrhea. Her mental state continued to deteriorate. Haloperidol chlorprothixene, perphenazine, amitriptyline, and thiothixene were tried and subsequently discontinued because of lactorrhea. A combination of perphenazine (4mg three times a day) and amitriptyline (25mg three times a day) produced marked improvement in her mental and physical states. It is postulated that the hypothalamic sensitivity to the release of prolactin can be altered if estrogens are given at a low dosage and are increased gradually to the therapeutic level, when the optimum dose can be discontinued without much discomfort to the patient. 15 references.

**121780** Learoyd, Brian M. North Ryde Psychiatric Centre, North Ryde, New South Wales 2113 Australia **Psychotropic drugs and the elderly patient.** Medical Journal of Australia (Sydney). 1(22):1131-1133, 1972.

Of 236 patients over the age of 65 years admitted to a regional psychogeriatric service, at least 37 (16%) presented disorders that were directly attributable to the side-effects of psychoactive drugs. These effects varied from excessive sedation with confusion, disorientation and syncope, to disinhibition reactions with aggressive outbursts. Most of the patients were treated with combined medication. Suspension of all medication frequently produced a rapid resolution of the disturbed behavior, and the patients were able subsequently to be discharged on greatly reduced medication. It is concluded that a mutually potentiating effect of simultaneously administered drugs is likely to occur in elderly patients, whose hepatic detoxifying enzyme systems may be considerably impaired. Total prohibition of all medication is thus preferable to the addition of yet another agent. The brain's inhibitory function, which has been most recently acquired, may be more susceptible to depression by drugs than its more primitive excitatory function, and thus it is believed that many sedative drugs will paradoxically produce a disinhibition reaction. 5 references. (Author abstract modified)

**121817** no author. no address **Suicidal and accidental digoxin ingestion.** Clinical Medicine. 79(7):38, 1972.



Clinical and serum digoxin concentration data were examined in 5 cases of accidental or suicidal ingestion of large amounts of digoxin. Three patients, age 20 or less, without previous evidence of heart disease, responded with development of atrioventricular block or sinoatrial exit block, which was reversed in two instances by atropine. The third patient died with refractory hyperkalemia, suggesting generalized inhibition of the cellular sodium potassium transport system. In two patients with preexisting advanced coronary artery disease, multifocal ventricular premature beats, ventricular tachycardia and ventricular fibrillation developed as initial manifestations of toxicity. It is suggested that accidental or suicidal digoxin intoxication can be managed in most cases by appropriate use of antiarrhythmic and vagolytic drugs combined, when necessary, with temporary preverous pacing techniques, but the death of one young woman underscores the need for more effective therapeutic modalities. 1 reference.

**121839** Maillis, Maxwell S.; Redenbaugh, James E. Department of Medicine, George Washington University Medical Center, 2150 Pennsylvania Avenue, N.W., Washington, DC 20037 **Hypothermia associated with methadone intoxication.** Medical Annals of the District of Columbia. 41(6):361-363, 1972.

A case study describing a state of profound hypothermia associated with methadone overdosage in an individual in whom tolerance for the drug was lost during a period of imprisonment is presented. Hypothermia developed after the ingestion of 150mg of methadone four weeks after withdrawal from its regular administration. The patient responded to ventilatory and circulatory support and was discharged from the hospital without followup. This case emphasizes the potential lethal side-effects which may occur following methadone overdosage. 10 references. (Author abstract modified)

**121976** Sedal, Leslie; Korman, Melvyn G.; Williams, Peter O.; Mushin, Gordon. Monash University Department of Medicine, Prince Henry's Hospital, St.Kilda Rd., Melbourne, Victoria, Australia **Overdosage of tricyclic antidepressants: a report of two deaths and a prospective study of 24 patients.** Medical Journal of Australia (Sydney). 2(2):74-79, 1972.

After two patients died suddenly on the third and fourth days respectively after an overdosage

of tricyclic antidepressants, a prospective study was undertaken, and the results for 24 consecutive cases are reported. Unexplained hyperpyrexia occurred in three patients, convulsions occurred in four patients, while in seven patients, an acute psychosis developed when consciousness was regained. During the prospective study, no patient developed a fatal arrhythmia, and neither rhythm nor conduction disturbances presented a serious problem to recovery. The clinical record of a patient who demonstrated marked disturbance in cardiac conduction and rhythm after tricyclic antidepressant overdosage is also reported. 9 references. (Journal abstract)

**121979** Candy, J. Bethlem Royal Hospital and Maudsley Hospital, London, S.E.5 **Severe hypothyroidism--an early complication of lithium therapy.** British Medical Journal (London). No.5821:277, 1972.

A case of severe hypothyroidism associated with lithium therapy in a 48-year-old woman being treated for depressive illness and hypomanic episodes is reported. In view of a history of a recurrent affective disorder, lithium carbonate was prescribed. Seven weeks after beginning lithium, she complained of mild depression, tingling in the hands and a hoarse voice. A week later, she was myxoedematous, complaining of drowsiness and sensitivity to cold, with swelling of face, fingers and ankles, moderate soft thyroid enlargement, exertional dyspnea, bradycardia and delayed tendon reflexes. Lithium treatment was terminated, and two months later she was euthyroid except for a mild bilateral carpal tunnel syndrome. Followup at 26 months revealed no symptoms of thyroid disorder with the exception of a unilateral mild carpal tunnel syndrome. Other studies have suggested that thyroid abnormalities associated with lithium therapy are unusual and relatively mild. This case reveals that potentially dangerous hypothyroidism can develop rapidly in a patient where there was no evidence before treatment began to suggest thyroid insufficiency. Therefore it is recommended that thyroid function be assessed before lithium treatment and at regular intervals while it continues. 6 references.

**122049** Berger, James E. College of Pharmacy, Butler University, Indianapolis, IN **Drug interactions and diuretic therapy.** Journal of the Indiana State Medical Association. 65(7):752-754, 1972.

The effects that the diuretic agents have on the electrolytes and fluid balance in the body, in addition to specific direct actions they have on the various physiological systems, make them prime candidates for many types of drug interactions. The physician should integrate pharmacology with the pathophysiology of the patient, and be alert to possible drug interactions due to the concurrent taking of other drugs. Mismanagement of diuretic therapy has led to acute hypovolemia, hypotension, and with ethacrynic acid, acute hypotension bordering on shock. Central nervous system depressants (alcohol, barbiturates and narcotics) and psychotropic agents (chlorpromazine, reserpine, tricyclic antidepressants and MAO inhibitors) may result in orthostatic or postural hypotension when combined with diuretics. Systems other than the cardiovascular system are affected by interactions. The hemopoietic system regulation by coumadin is unbalanced in the presence of diuretic therapy. The blood glucose level is increased. The additive actions of corticosteroids and potassium depleting diuretics may result in hypokalemia. Only close patient monitoring can avoid such hazardous situations in these drug combinations. 30 references.

**122094** Morrow, A.W. Australian Drug Evaluation Committee, 187 Macquarie Street, Sydney, N.S.W., Australia 2000 **Limb deformities associated with iminodibenzyl hydrochloride.** Medical Journal of Australia (Sydney). 1(13):658-659. 0

The ingestion of imipramine during pregnancy seemingly resulted in three cases of limb deformities in the children. The currently available data do not confirm a causal relationship between imipramine and congenital abnormalities of the limb. Data from the World Health Organization, New Zealand, Canada, West Germany, Denmark, Sweden, Finland, the United Kingdom, and Eire do not support this relationship. Congenital abnormalities of the limb were known to occur prior to the advent of modern therapeutics. In animal studies, imipramine is only dysmorphogenic at doses toxic to the mother and lethal to a proportion of the fetuses. It is concluded that the absolute safety of imipramine during pregnancy has not been established; however, current assessment proves no causal relationship with congenital abnormalities of the limb. The indications for imipramine, other antidepressants, tranquilizers, and antihistaminics during pregnancy, particularly the first trimester, should be very carefully weighed.

**122314** Favarel-Garrigues, B.; Favarel-Garrigues, J.-C.; Bourgeois, M. Centre Jean-Abadie et Centre de Reanimation respiratoire, 33, Bordeaux, France /**Two cases of severe lithium carbonate poisoning.** Deux cas d'intoxication grave par le carbonate de lithium. Annales Medico-Psychologiques (Paris). 130(2):253-257, 1972.

Treatment with lithium carbonate is known to have some undesirable side-effects (digestive troubles, thirst, polyuria, and neuromuscular effects) but lithium carbonate poisoning develops slowly. A prodromal period of 3 to 8 days is characterized by the presence of somnolence, tremors, and muscle spasm. At the height of the toxicity, the neurological picture emerges in association with a coma, moderate hypertonia, exaggerated osteotendinous reflexes, occasional stiffness of the neck, and spontaneous muscular spasms of variable intensity. The EEG reveals a diminution of the alpha rhythm, and an increase in theta and delta activities. Respiratory complications may be present which could prove fatal; otherwise, it may be cured within a period of 8 to 10 days. The two observations cited are exceptional in that the first patient developed severe neurological symptoms, and the second, a cardiovascular collapse. The treatment for lithium poisoning is purely symptomatic (there is no antidote), consisting of forced diuresis and administration of sodium salts. Renal dialysis did not help to alleviate the neurological symptoms in one of the patients. It is important to be alert in the detection of the prodromal symptoms of lithium intoxication and not to confuse these with the psychiatric symptoms. 14 references.

**122330** Muller, J.; Muller, D. Neurologisch-Psychiatrische Klinik der Medizinischen Akademie 'Carl East Gustav Carus', 8019 Dresden, Fetscherstrasse 74, East Germany /**Electroencephalographic correlates in overdose with anticonvulsive drugs.** Hirnelektrische Korrelate bei Überdosierung von antikonvulsiven Medikamenten. Nervenarzt (Berlin). 43(5):270-272, 1972.

In order to treat patients with symptoms of overdose, the necessity of combining the information regarding the clinical symptoms with that obtained from EEG tracings is stressed; the important features in anticonvulsive overdose are outlined for commonly used drugs in this field. The EEG changes due to bromide overdose show flat curves with dominant beta waves. The neurological psychiatric symptoms of barbiturate

overdose range from somnolence to severe unconsciousness, which is distinguished in the EEG tracing by increased beta activity, occasionally combined with irregular alpha activity. Pyrimidine overdoses show a similar EEG pattern. Hydantoin compounds produce more undesirable side-effects than do bromides and barbiturates, appearing as supplementary infections or loss of appetite, and may be detected even when the patient is bedridden. The EEG manifestations are in the theta and delta waves which have a pathological appearance. With an overdose of the benzodiazepine derivatives, the EEG picture is one of diffuse beta activity, especially in the forebrain. Carbamazepine, has a dose dependent action; even with good tolerance, this anticonvulsive affects the EEG picture adversely, showing changes in spike potentials and even in the location of foci. With succinimide treatment involving very high doses, large synchronized frontal waves are reported. 58 references.

**122340** Schulze, Bernhard. Psychiatrische Abteilung, Allgemeines Krankenhaus Ochsenzoll, D 2000 Hamburg 62, Langenhorner Chaussee 560, Germany /A drug induced cerebral reaction: a case of myoclonic status under treatment with tricyclic antidepressives./ Zur Frage medikamentos induzierter cerebraler Reaktionen: ein Fall von myoklonischem Status unter Behandlung mit tricyclischen Antidepressiva. *Nervenarzt* (Berlin). 43(6):332-336, 1972.

A case of myoclonic status as a result of treatment with tricyclic antidepressives is described. The patient, a 41-year-old woman, suffered from depression since 1964, and was treated with electroshock therapy for the first three episodes. The third depressive phase (1969) was treated by a combination of electroshock, followed by diazepam and amitriptyline. The last depressive episode occurred in 1971, when an EEG was found to be normal. The patient was treated with Limbatriil 'f' and small doses of clomipramine; due to diminished drive and loss of appetite, the patient was again given electroshock therapy, followed with thioridazine and amitriptyline. Five days later, the patient suffered myoclonic seizures with EEG polyspike wave complexes. The administration of Luminal stopped the myoclonia. It was observed that in the manifestation of myoclonia, hypomanic to manic moods appeared. 19 references.

**122352** Ott, B.; Jura I. D-6650 St.Ingbert, Kaiserstr.1, Germany /Artane, a hallucinogen?/ Artane als Rauschmittel? *Nervenarzt* (Berlin). 43(4):216-217, 1972.

The case of an exogenous psychosis due to the antiparkinsonism drug artane is presented. A 16-year-old girl, who took two capsules of artane, recounted that she had experienced visual hallucinations within 12 hours. Her parents observed changes in her mood; she talked a great deal, thought she heard people in the next room, was euphoric, and manifested psychomotor restlessness. This state did not continue beyond the next day, but she affirmed her hallucinations of the previous day. The effect of artane as a hallucinogen is discussed as analogous to that of atropine in certain individuals. The preparation, in this instance, was in the retard form, which may explain the protracted symptoms.

**122358** Persyko, I. Stockton State Hospital, 510 East Magnolia Street, Stockton, CA 95202 /Psychiatric adverse reactions to methysergide. *Journal of Nervous and Mental Disease*. 154(4):299-301, 1972.

Reports of somatic adverse reactions to methysergide (Sansert) are appearing with increasing frequency while psychiatric side-effects have not received enough attention in the professional literature in spite of this drug's 'street use' as a substitute for LSD. Content and sequential analysis of symptoms experienced and described by a patient following ingestion of a single tablet of methysergide is reported. These symptoms appear to follow the pattern of reaction to LSD with three clearly discernible phases: initial, somatic; middle, neurotic; and terminal, psychotic. The hallucinogenic potential of methysergide appears to fall into a pattern of historical sequence common to all drugs of dependence. Caution in prescribing methysergide to sufferers of frequent migraine headaches is recommended. 6 references. (Author abstract)

**122405** Hussain, M.Z.; Harinath, M. Prince Albert, Saskatchewan, Canada /Monoamine oxidase inhibitors. *Canadian Medical Association Journal* (Toronto). 106(6):639, 1972.

When prescribing monoamine oxidase inhibitors (MAOI's), the physician must be concerned with the drug's effectiveness, its comparative superiority to other modalities of treatment, associated



risks, the possibility of interference with other physical and psychological conditions or their treatment, and finally, how much worse off the patient would be if the treatment is not effective. MAOI's are highly toxic and potentially lethal when taken in combination with tyramine containing foods and drugs, and the danger of their use by a suicidal patient, or a depressed patient who may concomitantly use alcohol is stressed. One third of all suicides occur as a result of physician prescribed drugs. Until the indications for, and the effectiveness and safety of the MAOI drugs has been more conclusively demonstrated, their routine use as antidepressants or antiphobic agents is not justified. 6 references.

**122420** Orme, L'Estrange. Department of Clinical Pharmacology, Royal Postgraduate Medical School, London, England **Drug interactions.** Nursing Mirror and Midwives Journal (London). 134(21):13-15, 1972.

The importance of understanding the interaction of drugs is emphasized and certain drug interactions are described in general terms. One of the most common and least known ways in which the hospital nurse will meet drug interactions is through the intravenous infusion bottle and serious interactions may occur before the drug reaches the patient. Drugs may interact during the process of absorption but little is known yet in this field. Once a drug has been absorbed into the blood stream there are a number of potential sites where interaction may occur with other drugs. Once drugs have reached their site of action, they could also interact there. The oral anticoagulants can interact with barbiturates, glutethimid, meprobamate, estrogens, cholestyramine, phenylbutazone, indomethacin, salicylates, broad spectrum antibiotics, quinidine, anabolic steroids, clofibrate, alcohol, chloramphenicol and disulfiram. Oral hypoglycemic agents can interact with phenylbutazone, indomethacin, salicylates, sulphonamides, coumarin, and anticoagulants. Insulin can interact with propranolol. Monoamine oxidase inhibitors can interact with foods containing amines, tricyclic antidepressants, indirectly acting amines, and narcotic analgesics. Phenytoin sodium can interact with bishydroxycoumarin, disulfiram, isoniazid, and p-amino-salicylic acid. Allopurinol can interact with 6-mercapto-purine. A table indicating interactions of some common drugs is included.

**122440** Reed, Dwight; Cravey, Robert H.; Sedgwick, Paul R. Toxicology Laboratory, Office of the Coroner, Orange, California **A fatal case involving methylenedioxymphetamine.** Clinical Toxicology. 5(1):3-6, 1972.

The case of a 17-year-old girl who died as a result of an overdose of methylenedioxymphetamine (MDA) is reported. Autopsy of the girl's body revealed marked visceral congestion and edema with petechial hemorrhages being found on the surface of the heart. There were also relatively high levels of secobarbital found throughout the body; it is postulated that this drug may have been taken to counteract the toxic effects of the MDA. Interviews with other persons who had reported taking MDA indicated that symptoms such as nausea, mild euphoria, mild convulsions, high dosage methamphetamine symptoms, and depression are common following administration of the drug; other persons reported no discernible side-effects or aftereffect from it, however. In all instances, the subjects described a need to be with people during the MDA intoxication, as well as a feeling of 'great love for all mankind.' Illicit MDA is available in both capsule and liquid form, with the concentrations in the capsules varying between 200 and about 230mg. 7 references.

**122728** Jefferson, James W. Box 666, Letterman Army Institute of Research, Presidio of San Francisco, CA 94129 **A typical manifestations of postural hypotension.** Archives of General Psychiatry. 27(2):250-251, 1972.

Some atypical manifestations of postural hypotension are presented. Two patients receiving large doses of phenothiazines developed symptoms of postural hypotension while sitting. Because they were without symptoms when walking and because the hypotensive state closely resembled sleep, recognition of the true nature of the situation was delayed. Both cases are presented in order to emphasize an unusual and potentially hazardous manifestation of a common side-effect of phenothiazine therapy. 4 references. (Author abstract)

**122879** Rose, L. no address **Side effects of phenothiazines.** British Medical Journal (London). 1(5797):441, 1972.

In a letter to the editor the use of drugs and phenothiazines in particular in large doses is

discussed. It is suggested that dosage should be tailored to the degree of improvement in the absence of uncontrollable extrapyramidal effects. Use of large doses of any drug needs to be examined very carefully with an eye to the future of the patient apart from anticipation of immediate response. 1 reference.

**122880** Mandal, B.K.; Sengupta, P. Department of Infectious Disease, Monsall Hospital, Manchester 10, England **Side effects of phenothiazines.** *British Medical Journal* (London). 1(5797):441, 1972.

In a letter to the editor it is suggested that acute reactions to phenothiazines are not so rare. For physicians working in a regional tetanus center, acute phenothiazine dystonia following a single dose of perphenazine compound presenting as suspected tetanus is common. Adequate knowledge of prior immunization, inquiry regarding ingestion of antiemetic drugs of phenothiazine groups, and a diagnostic test employing benzotropine would spare the patient and his relatives anxiety.

**122881** Crawford, Robert J.M.; Robinson, T.J. Andrew Duncan Clinic, Royal Edinburgh Hospital, Edinburgh, Scotland **Side effects of phenothiazines.** *British Medical Journal* (London). 1(5797): 441, 1972.

In a letter to the editor the use of high doses of fluphenazine decanoate at short intervals is questioned. A policy of gradually increasing the dose of fluphenazine decanoate, titrating it against the patients symptoms, while simultaneously reducing oral phenothiazines gradually over the same period is suggested. Severe side effects are unusual with low doses however 33% of the patients suffer from mild rigidity and fine tremor. Fluphenazine is a valuable maintenance therapy in chronic psychotics who relapse because of failure to take oral phenothiazines. It has no place in the setting of an acute admission before stabilization on conventional phenothiazines has been obtained.

**122884** Brewer, Colin; Davidson, Jonathan. Midland Nerve Hospital, Birmingham, England **Psychosis and ketamine.** *British Medical Journal* (London). 1(5797):442, 1972.

In a letter to the editor a study of ketamine anaesthesia in electroconvulsion therapy (ECT) is

reported. In over 60 ketamine anaesthetics given to depressed and/or psychotic patients, hallucinations and other unpleasant emergence phenomena did not occur. Since most ECT patients are concurrently receiving psychotropic drugs, it is not clear whether it is the ECT or medication or both which provide this protection. Ketamine seems to have no adverse long-term effect on the psyche. In addition to causing no cardiac depression, little or no respiratory depression, and minimal interference with the airway, intramuscular ketamine in a dose of 4.4mg/kg gives a pleasant and rapid induction usually within three minutes when mixed with hyaluronidase. In the absence of hypertension, it is regarded the anaesthetic of choice for ECT where the patient is anxious and disturbed, or has no visible veins. 3 references.

**124139** Raft, David; Newman, Michael; Spencer, Roger. Department of Psychiatry, University of North Carolina School of Medicine, Chapel Hill, N.C. 27514 **Suicide on L-dopa.** *Southern Medical Journal*. 65(3):312, 324, 1972.

A case of suicide of a patient with Parkinson's disease who had been treated with L-dopa is reported. It is suggested that patients receiving L-dopa should have careful base line evaluation of mental status and extreme caution should be used where there is preexisting psychiatric illness. Periodic reassessment of the mental state is in order during the course of treatment. Dramatic physical improvement may mask a life-threatening mental disturbance. 12 references. (Author abstract modified)

**125199** Scott, Winfield H. Section on Clinical Psychology, Adult Psychiatry Branch, National Institute of Mental Health, Bethesda, MD **Daze reaction: prolonged response to psychedelics.** (Unpublished paper). Bethesda, MD, NIMH, 1972, 10 p.

A diagnostic condition of daze reaction described as prolonged, continuous and subjectively distressing experience of confusion with a radical change in visual perception following administration of psychedelics is reported. Three cases are presented together with psychological test data. In each case, it was the patient's first experience with drugs (lysergic acid diethylamide (LSD), hashish, and marihuana). In each case, the reaction developed in subjects in whom there was underlying depression at the time of their first and only drug experience. Patients presenting a daze

reaction would likely be lost in conventional diagnostic categories such as borderline schizophrenia or neurotic depression. These labels might be related to particular aspects of the disorder; but the cases presented here would suggest that it is a multifaceted condition of unclear etiology which should be distinguished diagnostically from affective and thought disorders, and which merits further study. 7 references.

**126231** Falek, Arthur; Jordan, Rusha B.; King, Barbara J.; Arnold, Paula J.; Skelton, W.Douglas Georgia Mental Health Institute, 1256 Briarcliff Rd.NE, Atlanta, GA 30306 **Human chromosomes and opiates.** Archives of General Psychiatry. 27(4):511-515, 1972.

A cytogenetic study of 16 opiate addicts receiving methadone hydrochloride compared with a control population revealed an unusual number of chromosome aberrations including dicentric chromosomes and an exchange figure at 72 hours in the addicted group, but no significant increase in chromosome anomalies over the controls at 48 hours. To determine whether methadone was the drug responsible for these chromosome abnormalities an in vitro study was initiated to evaluate the effects of methadone, morphine, and quinine on peripheral blood leukocytes from nonaddicts. Chromosome studies at three times normal, normal, and one third, one sixth, and one twelfth the normal therapeutic concentrations of quinine, morphine, and methadone introduced at 24, 48, and 68 hours into 72 hour leukocyte cultures did not reveal an increased frequency of chromosome damage. 22 references. (Author abstract)

**126339** Teller, Joseph D. Freehold, NJ **False glucose values with use of oxazepam.** Journal of the American Medical Association. 222(2):209, 1972.

In a letter to the editor, the report of false glucose values with the use of oxazepam was investigated. Since the pure drug gave no in vitro glucose reaction, it was concluded that the filler in the capsule reacted. Different methods of analyzing the filler (lactose) gave different results. These results could have been due to the highly colored oxazepam tablet or to the presence of a trace of lactose degrading enzyme. Comment is made on the measurement units expressing the glucose content of the tablets and a number of questions are raised. 3 references.

**126502** Raskin, David E. Department of Psychiatry, University of Chicago, 950 East 59th Street, Chicago, IL 60637 **Akathisia: a side effect to be remembered.** American Journal of Psychiatry. 129(3):345-347, 1972.

A diagnosis of akathisia is often overlooked when a patient's symptoms worsen during drug treatment. The symptoms, which include restlessness and anxiety, are much like those of such conditions as tardive dyskinesia, restless legs syndrome, and 'molimina crurum nocturna.' A warning is given that the phenothiazines, thioxanthenes, and butyrophenones exacerbate akathisia and that a careful diagnosis should be made before increasing a patient's medication. 13 references. (Journal abstract modified)

**127405** Langdon, David E.; Harlan, John R.; Bailey, Robert L. Box 9143 Wilford Hall, USAF Medical Center, Lackland AFB, TX 78236 **Thrombophlebitis with diazepam used intravenously.** Journal of the American Medical Association. 223(2):184-185, 1973.

The sporadic occurrence of significant thrombophlebitis has been the only troublesome sequela of fiber optic esophagogastrosopy, having an incidence of approximately one per 50 patients during 1,500 administrations of diazepam. As a followup, a prospective, randomized blind study utilizing diazepam alone or with flushes of saline solution, heparin sodium (10mg), or hydrocortisone (25mg) was initiated, and an additional 651 patients were studied. It is presently recommended that small veins or hand veins be avoided. If the vein is painful after injection, vigorous flushing of the vein is indicated. Administration of heparin sodium for 2-3 days is effective, and this therapy should be considered in more severe cases. Preliminary results of a randomized prophylactic flush study indicate decreased severity with flushing. 14 references. (Author abstract modified)

**128878** Khurana, Ramesh C. Magee Womens Hospital, Pittsburgh, PA **Estrogen - imipramine interaction.** Journal of the American Medical Association. 222(6):702-703, 1972.

A case report of estrogen - imipramine interaction in a female patient, producing lethargy, nausea, headaches, and low blood pressure is presented. The patient continued to manifest symptoms until estrogen therapy was discontinued.



tinued, completely at first and then 0.625 mg.: the patient's symptoms subsided dramatically. Physicians should be aware of this interaction since the two drugs are so commonly used in female patients. The high dose of estrogen appears to be the culprit but the mode of interaction is not understood.

**129509** Agulnik, Peter L.; Di Mascio, Alberto; Moore, Patricia. Littlemore Hospital, Oxford, England **Acute brain syndrome associated with lithium therapy.** *American Journal of Psychiatry.* 129(5):621-623, 1972.

Case studies are presented of three patients who were treated with lithium and who subsequently displayed symptoms resembling those of organic brain syndrome when their blood lithium levels were low. The lithium levels of all patients were slow to rise. When lithium therapy was stopped, the blood levels of the patients began to rise and then fell, at which time their symptoms remitted. It is postulated that this lithium toxicity may be due to tissue lithium levels. In these patients, the blood lithium level did not seem to reflect accurately the total level of lithium in the body, which is differentially retained in the tissues against a concentration gradient. 5 references. (Author abstract modified)

**129967** Hall, Richard C. W.; Joffe, Joy R. 334 Cornwall Rd., Winter Park, FL 32789 **Aberrant response to diazepam: a new syndrome.** *American Journal of Psychiatry.* 129(6):738-742, 1972.

Aberrant response to diazepam (Valium) is reported as a new syndrome. Six case histories are given. All showed symptoms of tremulousness, apprehension, insomnia, depression, and later, ego alien suicidal ideation. None had a history of previous psychiatric disorder, and all were taking greater than the maximum recommended dose of diazepam. Because the suicidal ideation in this syndrome differs from the usual indicators of suicidal intent, physicians should be alert to early symptoms of the syndrome and take measures to protect the patient against suicidal impulses. 11 references. (Author modified)

**130019** Van Eijk, R.; Bots, G. Th. A. M. Neuropathological Laboratory, Psychiatric Hospital, Endegeest, Oegstgeest, The Netherlands **Psychopharmacological agents and cerebral oedema.** *Psychiatria, Neurologia, Neurochirurgia (Amsterdam).* 75(1):61-67, 1972.

The occurrence of general cerebral edema in psychiatric patients treated with psychopharmacological agents was studied. Among the autopsy findings of a series of 347 psychiatric patients, indications of general cerebral edema occurred in 24 cases. In 20 of these cases this was a coincidental finding that may be considered a result of the organic abnormalities present. In the remaining patients the cerebral edema, which was accompanied by signs of increased intracranial pressure, was the only pathological finding. All these patients had been treated with psychotropic drugs. In these four patients consideration is given to a causal relationship between the drugs administered and the cerebral edema. 21 references. (Author abstract modified)

**131348** Flemenbaum, Abraham. Department of Psychopharmacology, University of Minnesota, Minneapolis, MN **Hypertensive episodes after adding methylphenidate (Ritalin) to tricyclic antidepressants: (Report of three cases and review of clinical advantages.)** *Psychosomatics.* 13(4):265-268, 1972.

Three cases are presented in which a combination of methylphenidate (MP) and tricyclic antidepressants was administered. The benefits and side effects of this treatment are discussed. In these subjects, a 27-year-old male, 25-year-old male, and 56-year-old female, who already had labile blood pressures, hypertension was noted in temporal relation to the addition of MP to the tricyclic antidepressant medication. The occurrence of such an adverse effect from this combination is atypical, according to the literature. Since the therapeutic effects are valuable, practitioners are encouraged only to be aware of the possible reaction rather than to eliminate the usage of the drug combination. 27 references.

**131574** Sheehan, David V. no address **The use of antihistamines for the alleviation of urinary retention caused by psychotropic drugs.** *Canadian Psychiatric Association Journal (Ottawa).* 17(5):390, 1972.

The use of antihistamines for the alleviation of urinary retention caused by psychotropic drugs is discussed. Cases of an 18-year-old male receiving Haldol and Cogentin and a 55-year-old male who experienced urinary retention are examined. In both patients, partial emptying of the bladder was accomplished within one hour after administration of 50mg Benadryl, with subsequent administration leading to more relief. It is suggested that the

therapeutic effect is due to the mildly spasmogenic action on the bladder exerted by the antihistamine, which counteracts the anticholinergic effects of the psychotropic drugs. 2 references.

**131617** Rothstein, Emil. Veterans Administration Hospital, Brockton, MA **Safety of disulfiram (Antabuse).** *New England Journal of Medicine.* 286(3):162, 1972.

In a letter to the editor, the safety of disulfiram (Antabuse) is discussed. No deaths or serious complications were reported to be due to disulfiram combined with alcohol since 1950. Disulfiram - alcohol reactions are generally unpleasant, and occasionally alarming, but have no long-term ill effects. It is concluded that disulfiram is a safe and valuable adjunct to a global treatment program for chronic alcoholism.

**132366** Stillman, Richard C.; Weingartner, Herbert; Wyatt, Richard J. Laboratory of Clinical Psychopharmacology, National Institute of Mental Health, Saint Elizabeths Hospital, Washington, DC 20032 **Mirth and Marijuana: preliminary findings.** (Unpublished paper). Washington, DC, NIMH, 1972, 1 p.

Reaction to conventional and nonconventional humor was studied in 20 subjects smoking marijuana on one occasion and placebo on another occasion. The subjects were shown cartoons some of which had captions changed to render them unfunny by conventional standards. There was virtually no difference between the amount of humor perceived by subjects in the marijuana condition versus the placebo. The unaltered cartoons were not thought significantly funnier after subjects had smoked marijuana than after they had smoked placebo. The altered cartoons, also, were perceived quite similarly in the two conditions with no significant increase in the number of altered cartoons which were believed to be real jokes under the influence of marijuana. On the other hand, there were significant increases in mirthfulness manifested by the subjects in five minute speech samples and self-reports. Associated with these were highly significant decrements in performance on verbal recall. The implications and importance of this unexpected intact ability to discriminate between funny and unfunny material are discussed.

**132372** Braude, Monique C. Center for Studies of Narcotic and Drug Abuse, Parklawn Building, National Institute of Mental Health, Rockville, MD **Toxicology in cannabinoids.** (Unpublished paper). Rockville, MD, NIMH, 1972, 21 p.

The toxicology of cannabinoids was studied. Results indicate that delta9-tetrahydrocannabinol (delta9-THC) given orally seems to be a safe compound in animals as well as in man and appears to have little teratological potential even at dose levels considerably higher than the typical human dose. Given parenterally, however, delta9-THC seems to have caustic properties which should preclude its use by parenteral routes of administration. Cannabinoids, in the high doses studied, seem to have a biphasic action on behavior, and to be able to produce neurotoxicity after long-term administration at generally toxic dose levels. 19 references. (Author abstract modified)

**132883** Passeri, M.; Ceccato, S. Ospedale G.Stuard, Via Don Bosco 2,43100, Parma, Italy **/Significance of transmethylation and S-adenosylmethionine (SAM) in the management of Parkinson's disease with L-dopa./** *Significato delle transmetilazioni e della S-adenosilmetionina (SAM) nella terapia del morbo di Parkinson con L-dopa.* *Minerva Medica Giuliana (Torino).* 63(30):1722-1759, 1972.

Side-effects induced by the treatment of Parkinson's disease with L-dopa are explained with reference to extra- and intracephalic metabolism of endogenous and exogenous L-dopa under physiological conditions and those of parkinsonism. Conflicting views on tyrosine degradation in the brain and elsewhere are reviewed, and chemical and experimental data are presented in an examination of the hypothesis of enzymatic or nonenzymatic decarboxylation of L-dopa into hydroxytyramine, followed by oxidative deamination and methylation of terminal catabolites. S-adenosylmethionine (SAM) deficiency responsible for depressed striate body hydroxytyramine levels and abnormal centroencephalic biogenous amine metabolism is further aggravated by the administration of the methyl acceptor L-dopa. Treatment with preformed 3-O-methyldopa has proven unsatisfactory, probably as a result of S-adenosylmethionine-catechol-O-methyltransferase (SAM-COMT) deficiency. Tyrosine was found to cause a 72% drop in intracephalic SAM values and a similar finding may be made in parkinsonian patients treated by L-dopa. This assumption was in-

vestigated on 47 parkinsonian subjects of which 21 received i.m. injections of L-dopa and 26 of L-dopa plus SAM, with the incidence and seriousness of extrapyramidal symptoms assessed by intragroup and group analysis. Significant treatment results with L-dopa plus SAM were achieved in reducing akinesia and rigidity and to a lesser degree tremor. 292 references.

**132901** Witzel, K. Kinderklinik, D-6800 Mannheim, Germany /Paspertin (metoclopramide) as a cause of dystonic hyperkinetic syndrome in children./ Paspertin (Metoclopramid) als Ursache des dyston-hyperkinetischen Syndroms bei Kindern. Monatsschrift für Kinderheilkunde (Berlin). 120(2):61-64, 1972.

A dystonic hyperkinetic syndrome, following the administration of Paspertin (metoclopramide) for treatment of gastrointestinal disorders in eight children, is described. The syndrome, similar to the side-effects appearing in some cases following neuroleptic medication, was observed from 1-3 days following the initiation of the medication and was characterized by motor disturbances, particularly in the facial region, neck and arms. The children remained conscious, appeared anxious and suffered painful muscular spasms. All the symptoms disappeared upon discontinuation of the medication, and the patients slept well with administration of a barbiturate, Dolantin or Valium. The quickest acting drug was Akineton, which was particularly effective in halting the muscular spasms. In two of the cases respiratory symptoms appeared which were of a threatening nature. Paspertin is not recommended for administration to children, despite the reversibility of the symptoms. 14 references.

**132959** Asher, W.L. American Society of Bariatric Physicians, 333 West Hampden Ave., Suite 307, Englewood, CO 80110 Mortality rate in patients receiving 'diet pills.' Current Therapeutic Research. 14(8):525-539, 1972.

Death rates over a 10-year period during and after treatment for obesity were determined for 7286 overweight patients receiving diet pills for varying lengths of time. The pills included amphetamines, diuretics, thyroid, laxatives, digitalis, or other drugs which were used alone or concomitantly in the treatment of obesity and related conditions. Of 20 nonheart associated deaths, two occurred during treatment (auto accidents), three within two weeks after the last

medication was taken, and 15 during the nontreatment period. Of 19 heart deaths, 7 occurred during treatment, one within two weeks after the last medication was taken, and 11 in the nontreatment period. During treatment female heart death rates were 77.6% of the 1966 General Mortality Table rates for a comparable age group and 145% during nontreatment; combined male and female heart death rates were 87% and 151%, respectively. At the start of treatment, hypertension existed in 68% (13 of 19) who later died of heart disease. 16 references. (Author abstract modified)

**132995** Pence, Hobert L.; Evans, Richard. Allergy and Clinical Immunology Services, Department of Clinics, Walter Reed Army Medical Center, Washington, DC 20012 In vitro methods of detecting drug hypersensitivity. Medical Annals of the District of Columbia. 41(7):431-436, 1972.

Various tests have been tried in the search for reproducible in vitro methods of detecting drug hypersensitivity. Adverse reactions include: overdosage, intolerance, idiosyncrasy, side effects, secondary effects, and allergic or hypersensitivity reactions. Tissue mast cells and basophil leukocytes undergo morphologic changes and degranulation during the acute anaphylactic type of allergic response. An analysis of these basophils has been used as an indicator of allergic reaction. Rat mast cell degranulation is another method based on the same assumption. The radioallergosorbent test (RAST) is used for the detection of serum reagent or IgE antibodies against specific allergens. The histamine release study is one method of measuring immediate hypersensitivity. Lymphocyte transformation separates the lymphocytes from peripheral blood. Macrophage migration inhibitory factor is a soluble mediator of delayed or cellular hypersensitivity. 5 references.

**133068** Lebensztejn, Witold; Jackiewicz, Helena. Szpital Wojewodzki im.J.Sniadeckiego, Oddział Neurologiczny, ul.Marii Curie-Skłodowskiej 25, Białystok, Poland /Cerebral disturbances in pregnancy due to acute poisoning with Stemetil./ Zaburzenia mozgowe u ciezarnej w przebiegu ostrego zatrucia Stemetylem. Wiadomosci Lekarskie (Warszawa). 6(1):551-553, 1972.

A case of acute poisoning with Stemetil is described in a woman aged 31 years in the third month of pregnancy, who took the drug for hyperemesis gravidarum. The clinical manifestations and treatment are discussed. The strongly



pronounced cerebral manifestations after ingestion of only 60mg of the drug during 18 hours are stressed. 9 references. (Author abstract)

**133123** El-Yousef, M.Khaled; Davis, John M.; Janowsky, David S.; Fann, William E. Department of Psychiatry, Vanderbilt University School of Medicine, Nashville, TN **Central atropine-like toxicity in combined psychotropic drug administration.** *Journal of the Tennessee Medical Association.* 65(8):719, 1972.

The occurrence of confusional states as a side-effect of high doses of anticholinergic drugs is discussed. Three female schizophrenic patients who had clinically worsened after receiving a combination of psychotropic and antiparkinsonian agents, were treated with physostigmine. To see if the worsening was essentially an atropine psychosis, they were given a total of five placebo and eight physostigmine injections on a double-blind basis and were evaluated for alleviation of the confusional state. No change occurred with the placebo injections. Atropine like psychosis will clear in a few days if medications are discontinued or the dosages reduced. The diagnosis of anticholinergic toxicity may be missed in psychiatric patients since these patients often already appear confused and psychotic due to their primary psychiatric illness, and may thus be inappropriately treated with increased drug administration. The diagnosis can be made based on the characteristic clinical symptoms and a comprehensive and carefully interpreted drug history. Physostigmine has numerous contraindications, and excessive doses can lead to excess cholinergic stimulation.

**133240** Serpe, S.J. 113 Clark Avenue, Massapequa, NY 11759 **Bromide intoxication.** *New York State Journal of Medicine.* 72(16):2086-2088, 1972.

A case of chronic bromide poisoning is reported in which the patient presented with obscure neurologic and psychiatric findings. A review of the literature indicates that these symptoms are common in bromism and that diagnosis should be sought in cases with similar findings. The patient was a 55-year-old woman. Her family claimed that she had developed drowsiness, marked depression, confusion, and hallucinations over a period of a few weeks. The patient herself complained of generalized weakness and difficulty in ambulating. According to a psychiatric note, the patient was

acutely psychotic and unmanageable, retarded in speech, demonstrating inappropriate behavior and delusional thinking. Salt therapy was begun. She was transferred for convalescent care to a private psychiatric facility. On admission she was noted to be restless, confused, and bewildered. She alternated between depression and overactive euphoria. The diagnosis of psychosis due to exogenous poison (bromide) was confirmed. Salt therapy was continued and her bromide levels fell to 37mg per 100ml. She has remained well since the time of her discharge. Difficulty in the diagnosis of bromide intoxication may be due to a paucity of physical signs. Pains in the back and shoulders were common complaints in the 27 patients that were studied at the Boston City Hospital. The most commonly encountered symptom was weakness. This appeared in 21 of the cases. The state of consciousness was disturbed in 14 of the patients. Psychiatric changes were prominent. Extreme excitement was very characteristic. The diagnosis of bromism is substantiated by a serum bromide determination. 17 references.

**133331** Kuschke, Renate; Kirchner, Peter. Fackrankenhaus fur Psychiatrie und Neurologie Lichtenberg, Herzbergstrasse 79, 113 Berlin, Germany /**Report on a case of status psychomotoricus with tonic twilight attacks in drug overdose.** Bericht uber einen Fall von Status psychomotoricus mit tonischen Dammerattacken bei Medikamentenuberdosierung. *Psychiatrie, Neurologie und medizinische Psychologie (Leipzig).* 24(5):282-288, 1972.

A case of psychomotor epilepsy is described, associated with a tonic twilight state, in a 30-year-old-man. His case history revealed possible early brain injury with sporadic epileptic attacks. As a youth, he was treated with anticonvulsant medication (Phenytoin and Lepsir) on a regular basis. Prior to hospitalization, the patient had been treated with additional anticonvulsants. Upon admission the patient appeared drowsy and sluggish with blurring of speech. The most conspicuous findings were that of tonic convulsions of the extremities and swallowing of air; the pupils reacted to light. Under EEG examination, more dysrhythmia was observed in the left temporal zone with slow episodic alpha rhythms. It is suggested that possible brain stem damage may result from a surfeit of anticonvulsant drugs. 11 references.

133350 Blum, A.; Mauruschat, W. Psychiatrische und Neurologische Klinik und Poliklinik der Freien Universitäts Berlin, Nussbaumalbe 36, 1 Berlin 19, Germany /Temperature increases and blood protein changes with neuroleptics: with special consideration of the new dibenzodiazepine derivative, clozapine./ Temperaturanstiege und Bluteiweissveränderungen unter der Therapie mit Neuroleptika -- unter besonderer Berücksichtigung des neuartigen Dibenzodiazepin-Derivates Clozapin. *Pharmakopsychiatrie Neuropsychopharmakologie* (Stuttgart). 5(3):155-169, 1972.

During a study of the clinical effects of the new antipsychotic drug clozapine a rise in body temperature and humoral changes were found in a high percentage of patients. This effect has been investigated more thoroughly in 20 patients treated with 500mg daily of clozapine for 30 days. In 11 patients temperature measured rectally rose to more than 38 degrees C. around the 10th day of treatment. Temperature decreased to normal levels within several days. In many patients the erythrocyte sedimentation rate and the alpha- and beta-serum-globuline fractions were increased. The total number of leukocytes and/or the percentage of myelocytic forms of the white blood cells was also elevated. Some explanations for the observed rises in temperature and for the humoral changes are discussed. It is postulated that these effects might be the result of an unusually strong blocking of intracerebral cholinergic synapses. 52 references. (Journal abstract modified)

133450 Maslowski, Janusz. Poradnia Zdrowia Psychicznego, ul. Wojska Polskiego 5, Tczew, Poland /A case of early oxazepam addiction treated in the outpatient clinic./ Przypadek wczesnej oksazepamomanii leczony ambulatoryjnie. *Psychiatria Polska* (Warszawa). 6(2):223-224, 1972.

A case of early oxazepam addiction in a 34-year-old woman is discussed. She suffered pain in the heart region accompanied by its spasmodic beat and stiffening of the left upper extremity, anxiety and different vegetative symptoms. She took 30mg of oxazepam three times a day and one tablet of tardyl at night. After one month's time the patient had to take oxazepam continuously; the addiction was characterized by psychophysical dependence on the action of oxazepam and the irresistible drive to take it. EEG, standard laboratory tests, and eye tests did not indicate any organic changes. She was treated for the ox-

azepam addiction with sulfate of magnesia in a 20% solution and small doses of thioridazine. Followup tests after 5 months indicated a significant and stable improvement. The short period of drug use did not lead to chronic poisoning of the organism and deterioration of internal organs characteristic of more serious cases. 6 references.

133516 Ekbom, Karl; Lindholm, Halvar; Ljungberg, Lennart. Department of Neurology, Soder-sjukhuset 100 64 Stockholm 38, Sweden New dystonic syndrome associated with butyrophenone therapy. *Zeitschrift fur Neurologie* (Berlin). 202(2):94-103, 1972.

An acute syndrome in three elderly women with presenile dementia appeared as a side-effect to treatment with methylperone (Buronil) and/or haloperidol (Haldol). In every case a tonic flexion of the trunk to the side was observed. Also a slight rotation of the trunk in the sagittal plane was noted. The rotation increased with walking and then the patients had a tendency to turn in a direction opposite to the path of walking. Postural and gait disturbances occurred as isolated symptoms and were different from the previously reported symptoms of acute dystonia with phenothiazine treatment. The symptoms were reversible and were improved by antiparkinson medication. The similarity in chemical structure of the butyrophenone preparations suggests a common, central mechanism of origin for the symptoms. A reversible functional disturbance in the monoamine transmission in the basal ganglia is a probable explanation. 20 references. (Journal abstract)

133719 Gaddie, J.; Legge, J.S.; Palmer, K.N.V.; Petrie, J.C.; Wood, R.A. Department of Medicine, University of Aberdeen, Aberdeen, Scotland Effect of nitrazepam in chronic obstructive bronchitis. *British Medical Journal* (London). 2(5815):688-689, 1972.

It is suggested that nitrazepam, a benzodiazepine derivative like diazepam, which also has central muscle relaxant properties, is contraindicated in patients with severe chronic obstructive bronchitis. The effect of nitrazepam on ventilatory capacity and arterial blood gas tensions was studied in a double blind controlled crossover trial in six patients with chronic obstructive bronchitis in ventilatory failure (raised arterial carbon dioxide tension). Nitrazepam produced a fall in ventilatory capacity and wor-

sening of the ventilatory failure in five patients. In the sixth patient, while on the active drug, the arterial oxygen tension fell from 48 to 35mm Hg while the arterial carbon dioxide tension rose from 59.5 to 68mm Hg.

**133804** Rothschild, Carl J.; Nicol, Hamish. Health Sciences Centre Hospital, Vancouver 8, British Columbia, Canada **Allergic reaction to methylphenidate.** Canadian Medical Association Journal (Toronto). 106(10):1064, 1972.

Twin siblings (age 4 years 9 months) were brought to a hospital clinic with the complaint of hyperactivity and retarded language development. The brother was successfully controlled on methylphenidate, 5mg twice daily, showing decreased hyperactivity and irritability and an increase in attention span and persistence. The sister was also given a 5mg dose of methylphenidate. About 30 minutes after the first dose, the child developed red eyes and swollen eyelids. Two days later, a second 5mg dose was administered and a mild reddening of her eyes occurred; the child complained of severe formications. It is concluded that the child had an acute allergic reaction manifesting itself in a histaminelike conjunctivitis and formications caused by the methylphenidate used to treat her hyperactivity.

**134118** Snyder, Solomon H. Department of Psychiatry, Johns Hopkins University School of Medicine, Baltimore, MD 21205 **Amphetamine psychosis: a 'model' schizophrenia mediated by catecholamines.** American Journal of Psychiatry. 130(1):61-67, 1973.

Because of its close clinical similarity to acute paranoid schizophrenia the hypothesis that amphetamine psychosis can serve as a useful experimental model for schizophrenia was tested. Molecular and clinical studies suggest that both the schizophrenia like symptoms of amphetamine psychosis and the specific ability of phenothiazines to relieve the symptoms of schizophrenia and amphetamine psychosis may be the result of interactions with dopamine systems in the brain. Some implications of the roles dopamine and norepinephrine may play in mediating some schizophrenic symptoms were discussed. 50 references. (Author abstract)

**134119** Murphy, Dennis L.; Goodwin, Frederick K.; Brodie, Keith H.; Bunney, William E., Jr.

Building 10 Room 3S-229, NIMH, Bethesda, MD 20014 **L-Dopa, dopamine, and hypomania.** American Journal of Psychiatry. 130(1):79-82, 1973.

Episodes of hypomania observed in bipolar depressed patients receiving L-dopa and dopamine were investigated. Greater urinary excretion of dopamine during L-dopa administration was observed in bipolar than in unipolar depressed patients. It is suggested that increased levels of brain dopamine may play a role in the development of hypomania and mania, since there is a tendency for bipolar patients to regularly develop hypomanic episodes during L-dopa treatment and since evidence from animal studies indicates that increased brain dopamine is highly correlated with increased psychomotor activity. 18 references. (Author abstract)

**134120** Klawans, Harold L., Jr. Department of Neurological Sciences, Rush-Presbyterian-St. Lukes Medical Center, Chicago, IL 60612 **The pharmacology of tardive dyskinesias.** American Journal of Psychiatry. 130(1):82-86, 1973.

The activity of dopamine at certain striatal dopamine receptors which is related to the appearance of tardive dyskinesias in man is discussed. By analogy to Huntington's chorea and L-dopa induced dyskinesias in parkinsonism, it appears that tardive dyskinesias are related to increased responsiveness of dopamine receptor sites as a result of neuroleptic induced denervation hypersensitivity. It has been demonstrated that anticholinergic drugs worsen tardive dyskinesias in patients who have this disorder. It also appears that anticholinergic drugs decrease the threshold for tardive dyskinesias and thereby increase the incidence of this disorder. This implies that centrally active anticholinergic agents should not be used as a routine adjunct to neuroleptic therapy. 34 references. (Author abstract)

**134310** Mellerup, E. T.; Thomsen, H. Gronlund; Bjorum, N.; Refaelsen, O. J. Psychochemistry Institute, Rigshospitalet, 9, Blegdamsvej, DK-2100 Copenhagen O, Denmark **Lithium, weight gain, and serum insulin in manic-depressive patients.** Acta Psychiatrica Scandinavica (Kobenhavn). 48(4):332-336, 1972.

Serum insulin was determined in drug free and lithium treated manic depressive patients, some of whom had gained weight during treatment. Serum insulin was lower in the drug free patients com-



pared with the lithium treated manic-depressive group and with the healthy controls. The increase in serum insulin was the same in patients with and without a weight gain. The increase in serum insulin together with direct effects of lithium on carbohydrate metabolism might, in some patients, be a sufficient basis for the appearance of a weight gain. 16 references. (Author abstract)

**134326** Butterworth, A. T. East Louisiana State Hospital, State Department of Hospitals, Jackson, LA 70748 **Inhibition of extrapyramidal side effects of haloperidol through the joint use of imipramine-type drugs.** *Psychosomatics*. 13(5):328-332, 1972.

A preliminary study was designed to test whether imipramine or desipramine, members of the dibenzazapine group of tricyclic antidepressants, could counteract the extrapyramidal side-effects of haloperidol. Thirty institutionalized female schizophrenic patients were given haloperidol until extrapyramidal side-effects occurred. Then imipramine or desipramine was added in an attempt to eliminate these reactions. Twelve of the 15 patients receiving imipramine had a positive response, as did nine of 15 in the desipramine group. Patients with severe or very severe effects of haloperidol seemed to improve more on imipramine. Decreases of haloperidol induced side-effects were statistically significant for both treatment groups. 14 references. (Author abstract modified)

## 16 METHODS DEVELOPMENT

**133644** Dixon, Wilfrid J. no address /**Multiple regression techniques in predicting patient response to psychopharmacologic drugs.**/ no title. Final Report, NIMH Grant MH-18,403, 1972. 2 p.

Multiple regression techniques for predicting patient response to psychopharmacologic drugs were investigated with the use of interactive terminal programs. Two techniques were incorporated into these programs: Winsorization, which reduces the influence of extreme or unusual cases on a regression equation; and a measurement of reliability which is based on estimates of prediction regarding successive subsamples which exclude one patient at a time. For samples with few patients or extreme cases, the predicted residual sum of squares was usually larger than the residual sum of squares. These two measurements of error converge as the sample size increased or when the degree of con-

tamination of the sample is reduced by Winsorization. While these techniques have been applied to simple linear regression models, more testing is needed before they can be applied to multidimensional predictor data.

## 17 MISCELLANEOUS

**119024** Janssen, Paul A.J. Janssen Pharmaceutica, Research Laboratoria, Beerse, Belgium **Long-acting neuroleptics and other psychoactive drugs of the future.** *Clinical Medicine*. 79(6):12-14, 1972.

The long-acting neuroleptic drugs will be of value in the prevention of psychotic relapses in schizophrenic patients and in the eradication of the drug addiction problem. Several of the long-acting neuroleptics of the diphenylbutylpiperidine series (e.g., pimozide, fluspirilene, and penfluridol) are fairly well tolerated, easily administered, and of therapeutic value in preventing psychotic relapse in discharged schizophrenic patients. These drugs are inherently long-acting because they form extremely stable complexes with their specific receptors in the brain, and the margin between their effective maintenance dosages and side-effect producing dosages is large. Several other of the neuroleptic drugs, particularly haloperidol and droperidol, are potent inhibitors of psychologic dependence in patients addicted to morphine-like drugs, amphetamine-like stimulants, and alcohol. These neuroleptics exert a potent anticraving effect in these individuals, thereby considerably increasing the effectiveness of psychotherapy and sociotherapy. The anticraving drugs have also been used in the treatment of a variety of craving problems other than drug addiction. Benperidol has been effective in the treatment of sexual offenders on an outpatient basis. Another possible use for the neuroleptic drugs is in the manipulation of the immunologic defense mechanisms in autoimmune psychotic diseases. These drugs will probably act by boosting the immunologic defenses of the individual against the specific clones which lead to a typical clinical syndrome when allowed to proliferate.

**119546** Ad Hoc Committee on Guidelines for the Use of Drugs and Other Chemical Agents in Research. Office of Scientific Affairs, American Psychological Association, 1200 17th Street, N.W., Washington, D. C. 20036 **Guidelines for psychologists for the use of drugs in research.** *American Psychologist*. 27(4):335-336, 1972.

Guidelines drawn up by the Ad Hoc Committee on Guidelines for the Use of Drugs and Other Chemical Agents in Research are described. These guidelines indicate that as a general principle a psychologist or psychology student who per-

forms research involving the use of drugs must have adequate knowledge and experience of each drug's action or work in collaboration with or under the supervision of a qualified researcher. Any psychologist or psychology student doing research with drugs must comply with the procedural guidelines. Any supervisor or collaborator has the responsibility to see that the individual he supervises or collaborates with complies with the procedural guidelines. Qualified researcher and drug are defined. Nine procedural guidelines are given. (Journal abstract modified)

**119835** Smith, Jack R.; Naquet, Robert. University of Florida, Gainesville, Fla. **Spindle-like activity in the cat.** *Psychophysiology*. 9(1):147, 1972.

In a paper presented to the 11th Annual Meeting of the Association for the Psychophysiological Study of Sleep it is reported that an electronic system has been developed for the detection of paroxysmal (10.5 to 15 Hz) burst activity in cortical EEGs of cats. The bursts occur infrequently during response and REM sleep, but average more than 6 per min in a healthy animal. The descriptor provides a well defined method for obtaining quantitative and reproducible data from the EEG, and furnishes an effective method for quantifying the effects on the EEG of agents which are known to modify the pattern of brain activity (valium) for levels of brain neurohumoral agents (5-HTP, Dopa). Variations in this activity have been obtained by monitoring the entire 24 hour sleep - wakefulness pattern. A systemic administration of 30mg/kg L-5-HTP and L-Dopa reduced the rate of occurrence of this activity for several hours. The reduction was followed by a rebound which appeared to compensate for the deprived activity. (Journal abstract modified)

**120487** Cooper, Jack R.; Bloom, Floyd E.; Roth, Robert H. Yale University School of Medicine, New Haven, CT **The biochemical basis of neuropharmacology.** New York, Oxford University Press, 1972. 250 p. \$6.95 paper.

Neuropharmacology is examined by way of the physiology and biochemistry of nervous tissue. The book is organized around neurotransmitters, including acetylcholine, serotonin, and the catecholamines, with individual drugs described where their action is related to the subject under

discussion. This focus on chemical transmission is logical as the mechanisms of action of nearly all neuropharmacological agents, except the local anesthetics, seem to be involved primarily with synaptic events. A critical assessment of research techniques is made in each section.

**120655** Shader, Richard I.; Dimascio, Alberto; Harmatz, Jerold S. Massachusetts Mental Health Center, 74 Fenwood Rd., Boston, MA 02115 **Single versus repeated dosage of the minor tranquilizer chlorthalidazine (Librium).** *American Journal of Psychiatry*. 128(12):1576-1577, 1972.

The effects of single and repeated doses of medication on the same individuals were studied. The direction of change found after an individual had taken a single dose of medicine was compared with that found after he had taken the same drug for one week. When chlorthalidazine was administered, the direction of change noted after the single dose was indicative of that noted after repeated doses. 2 references. (Author abstract modified)

**120735** Archibald, H. David. Addiction Research Foundation, Toronto, Canada **International convention on psychotropic drugs.** *British Medical Journal* (London). 1(5792):111-112, 1972.

An argument is presented for the control of psychotropic drugs for research purposes by scientists, not administrative officials. Ratification of the international convention on psychotropic substances by the English Parliament should be preceded by adequate discussion. 1 reference.

**121255** Roberts, Leigh M. University of Wisconsin Medical Center, Madison, WI **Management of depression.** *Wisconsin Medical Journal*. 71(6):171-174, 1972.

The diagnosis and management of depression in general practice are discussed. Depressions are common in medical practice and they frequently coexist with medical and surgical problems. Antidepressant drug studies are mostly poorly controlled, but the drugs are effective in many seriously depressed patients. Symptomatic relief includes lessening the intensity of symptoms more rapidly than expected through spontaneous remission, reducing the risk of suicide, elevating mood, improving appetite and sleep patterns, lessening hopelessness, and promoting social and vocational adaptation. Tricyclic drugs are the compounds of

choice for the treatment of depression since monoamine oxidase inhibiting drugs are both more hazardous and less effective. The major tricyclic drugs are imipramine, desipramine, amitriptyline, nortriptyline, protriptyline, and doxepin. 3 references. (Author abstract modified)

**121261** Capparell, Homer V. Western Psychiatric Institute and Clinic, 3811 O'Hara Street, Pittsburgh, PA 15213 **Drugs versus psychotherapy.** *New York State Journal of Medicine*. 72(14):1830-1833, 1972.

The use of psychotherapy and psychochemotherapy in the treatment of the emotionally ill is discussed. There are two major categories of psychochemotherapeutic drugs: the tranquilizers and the antidepressants. All depressed patients, except malignantly suicidal persons, should receive some antidepressant medication. Successful drug treatment depends upon accurate diagnosis of the problem, selection of the proper drug, and the administration of an effective dose. There are two groups of tranquilizers: the minor tranquilizers, which include meprobamate, chlorthalidazine, and its congeners, are used in the treatment of the neuroses; the major tranquilizers, including the phenothiazines, the thioxanthines, and the butyrophenones, are used in the treatment of schizophrenia and other psychoses. Psychotherapy, of which there are many varieties, is used to alleviate suffering and help patients handle their feelings, behavior, and motivations in a more effective manner. Since psychotherapy is a skilled or artistic procedure, and is hard to define, difficult to teach, and time consuming, drugs can be beneficially used by general practitioners. The use of drugs does not, however, preclude the possibility of psychotherapy and may actually facilitate the therapeutic process. Whatever the method of treatment chosen for disturbed patients, the doctor should be prepared to spend time with them to ensure that the proper treatment is properly applied. 8 references.

**121779** Goulston, Kerry. 41 Ainslie Avenue, Canberra City, Australian Capital Territory 2601, Australia **Drug usage in the irritable colon syndrome.** *Medical Journal of Australia* (Sydney). 1(22):1126-1131, 1972.

Current drug treatment of the irritable colon syndrome (a symptom complex of abdominal pain or discomfort and altered bowel habits, in the



absence of evidence of organic disease) was investigated through a survey of prescribing preferences of 40 general practitioners and 20 gastroenterologists. A wide disparity of prescribing habits was revealed. Twenty nine drugs are currently recommended for the treatment of the irritable colon syndrome, and 23 of these are listed in the Pharmaceutical Benefits Scheme of Australia. Studies have indicated that a placebo alone has produced satisfactory results in 35% to 47% of patients given the placebo. Thus a double-blind assessment of drugs used in treating the syndrome is essential. Yet only five of the 29 drugs have been subjected to such double-blind controlled trials. A review of the available literature reveals that only Cantil, Duspatalin, Librax, Belladanal and Valpin have proven effective in double-blind controlled trials. It is concluded that clinicians should demand more evidence of efficacy of the available drugs, and that the Government should organize and subsidize drug trials. 48 references.

**121940** Johnson, F.N. Department of Psychology, University of Birmingham, P.O.Box 363, Birmingham B15 2TT, England **Psychopharmacology and pharmacotherapy in psychiatry.** *Psychosomatics*. 13(3):203-205, 1972.

Since 1950, with the discovery of the tranquilizing properties of chlorpromazine, there has been a proliferation of literature relating to the behavioral effects of drugs. An examination of the literature reveals a preoccupation with mechanisms of drug behavior interactions which relate neither directly nor easily to the therapeutic context. Conceptual models of drug action are needed which are congruent with conceptual models of psychiatric disorders, so that any statement made about effects of a drug in an experimental test situation may be directly translated into a statement about the likely effect of that drug upon a particular psychiatric disorder. The psychiatrist treats the whole patient and modifies behavioral interactions and transactions which occur between the patient and the environment. In order to be of practical use to the psychiatrist, the psychopharmacologist must adopt the same conceptual framework and cast his models of drug action in macro terms. Psychiatrists must describe the disorders which they meet in terms which the psychopharmacologist can translate into laboratory test situations, and the psychopharmacologist must present his findings in a conceptual language which has direct relevance to the clinical situation. 3 references.

**122079** Carden, T.S., Jr. no address **A vote against antisubstitution repeal.** *Journal of the Indiana State Medical Association*. 65(7):759-760, 1972.

There is no justification for the current campaign by the American Pharmaceutical Association for repeal of its state antisubstitution laws. The American Pharmaceutical Association contends that legalized free substitution would help solve the problem of underutilization by giving pharmacists new responsibility, but the pharmacist may not be educationally, professionally, or ethically prepared for such responsibility. Efforts are being made to give the pharmacist a measure of clinical competence through consultations with patients and physicians about drug related problems, but it is still the physician who has the legal and moral responsibility for the care of his patients. 1 reference.

**122095** Hordern, Anthony; Wheatley, David. King's College Hospital, London **The black cloud: the recognition and treatment of endogenous depression in general practice.** *Medical Journal of Australia* (Sydney). 1(13):637-643, 1972.

Reasons for failing to diagnose endogenous depression in general practice are discussed, and a classification of depression with a series of target symptoms and antecedent features is provided. There appear to be five problems in recognizing endogenous depression: 1) medical education usually stresses the organic and the physical, not the functional and emotional aspects of disease; 2) the general practitioner has the primary responsibility of deciding whether or not the patient is suffering from an organic disease; 3) some psychiatrists have given the general practitioner the idea that it is wrong to question a patient about psychiatric symptoms; 4) many depressives find their threats to commit suicide are disregarded; and 5) the problems raised by classification and nomenclature make it difficult for the general practitioner to arrive at an exact diagnosis, prognosis, and rational plan of treatment. Medicosurgical, organic and functional psychiatric depressions are discussed. Endogenous depressions tend to occur in older, more stable, people. Ten symptoms present in almost every depressed patient are depressed mood, retardation, self-reproach, reduced work and interests, suicidal impulses, anxiety, agitation, insomnia, anorexia, and loss of weight. The patient with an endogenous depression insufficiently severe to warrant hospitalization will usually respond to a suitable

antidepressant. The majority of endogenous depressions respond to the tricyclic antidepressants or their derivatives: imipramine, amitriptyline, disipramine, nortriptyline, opipramol, dibenzepin, and doxepin. 33 references.

**123040** Jasinski, Donald R.; Nutt, John G.; Martin, William R. National Institute of Mental Health Addiction Research Center, Lexington, KY Progress report on the assessment program of the NIMH Addiction Research Center. (Unpublished paper). Lexington, KY, NIMH, 1972 44 p.

A progress report on the assessment program of the National Institute of Mental Health (drug) Addiction Research Center at Lexington, Kentucky is presented. The study covers the following subjects: (1) evaluation of the ability of a mixture of dextroamphetamine and morphine to produce euphoria; (2) evaluation of the ability of single doses of methadone to produce morphine like euphoria and pupillary constriction; (3) studies of methadone naloxone mixtures in man; (4) studies in subjects dependent upon 30mg of morphine per day to determine if pentazocine and nalbuphine have partial morphine antagonistic activity; and (5) estimation of the duration of action of naloxone pamoate suspended in 2% aluminum monostearate in sesame oil. 18 references.

**124257** Wyatt, Richard J.; Green, Richard; Vaughan, Thomas; Dawson, Susan. National Institute of Mental Health, Rockville, Maryland Sleep of seven phenothiazine resistant, drug-free chronic schizophrenics. *Psychophysiology*. 9(1):139, 1972.

In a paper presented to the 11th Annual Meeting of the Association for the Psychophysiological Study of Sleep 7 phenothiazine resistant chronic male schizophrenic patients, free from all drugs for 3 weeks or longer, were studied for 6 nights. The mean total sleep was 289 min; NREM 232 min; delta sleep 18 min; REM time 56 min; REM percent 20; while the REM density (an estimate on a 0 to 8 scale of the total number of eye movements per minute of REM sleep) was 1.1. In 15 normal subjects total sleep was 416 min; NREM 336 min; delta sleep 43 min; REM time 81 min; REM percent 19; and REM density 1.7. Of particular interest is the low REM density. Unlike the control group, the schizophrenics frequently had rapid eye movements during NREM sleep (primarily stage 2). At times these rapid eye

movements occurred as frequently as 2 to 3 per min. Usually, they were accompanied by a change to a low voltage fast EEG and a drop in muscle potential (microREM) lasting several seconds. At other times, the rapid eye movements occurred in the midst of K-complexes and spindles. (Journal abstract modified)

**124328** no author. no address **Amphetamines**. New Zealand Medical Journal (Dunedin, New Zealand). 75(478):160, 1972.

The legitimate prescribing of amphetamines is discussed and measures to diminish their availability for drug abuse by voluntary restrictions on prescriptions are suggested. Therapeutic indications that have continued to have support include narcolepsy, hyperexcitability in children and petit mal epilepsy. Use of amphetamines in appetite suppression, in the management of parkinsonism and in depression is now considered obsolete. Even for narcolepsy, where such a diagnosis can be sustained with certainty, the effects of amphetamines in the long-term must be viewed somewhat critically in view of the tolerance that ordinarily develops to the effects of amphetamines on sleep. Severe and intractable heart failure has been reported following the use of large doses of amphetamine for narcolepsy. In general, the number of actual patients for whom an amphetamine is specifically indicated is extremely small; few patients would be seriously inconvenienced by some form of restriction on the general availability of amphetamines. 5 references.

**125038** Shepherd, Michael. Institute of Psychiatry, University of London, London, England **The classification of psychotropic drugs**. *Psychological Medicine* (London). 2(2):96-110, 1972.

A survey is provided of the various attempts which have been advanced to classify psychotropic drugs. The history and traditional subdivisions are presented along with efforts to classify psychotropic drugs by workers with a specialized interest in the field. The use of target symptoms, clinicopathological criteria, or biological classification to categorize drugs is examined. The unsatisfactory nature of the schemata and the underlying reasons for this are discussed. The possible use of facet analysis to develop a classificatory system is suggested. The obstacles to satisfactory classification in the sphere of psychopharmacology

gy reside in ignorance about psychotropic drugs and mental illness. An indexing scheme is provided in the appendix. 59 references. (Author abstract modified)

**125039** Marley, E. no address **Pharmacology and psychiatry.** *Psychological Medicine* (London). 2(2):93-95, 1972.

Recent cooperation between pharmacology and psychiatry is discussed. Drugs introduced into the market for other purposes were deployed into psychiatry. Among drugs emphasized are monoamine oxidase inhibitors, dopamine, and catecholamine activators. The catecholamine hypothesis that attributes mania to excess noradrenaline at central nervous receptors is presented. The greatest success in treating depression has been with the tricyclic derivatives. Difficulties of research into schizophrenia are examined. The value of drugs for patients with anxiety and autonomic symptoms is noted. 10 references.

**125278** Smith, David E.; Gay, George R. 529 Clayton Street, San Francisco, CA 94117 **Medical care of psychotropic drug problem patients outside hospital.** *World Medical Journal*. 19(2):23-26, 1972.

The experience of psychiatrists staffing the Free Clinic for drug abusers in the Haight-Ashbury area of San Francisco is reported as an aid to medical practitioners. Support is given for the notion that drug patients require sympathetic nonpunitive and professionally competent facilities where they can feel comfortable and receive the needed care. Experience has also indicated that with the emergence of the new widespread use and abuse of multiple psychotropic drugs, the general practitioner or family doctor must educate himself in an entire new sphere of psychological and medical therapeutics. The variety of acute reactions from stimulants, sedative - hypnotics, hallucinogens, and narcotics often requires a complete health team approach, including paraprofessionals and exusers. Once the acute reaction is resolved, the physician must provide followup care. Such management includes: (1) appropriate treatment of hard core addicts; (2) management of flashbacks from hallucinogenic drugs; (3) management of the underlying psychiatric problems of the drug user; and (4) management of the medical complications arising from drug abuse. Finally, the physician must also play a preventive role in discouraging the un-

necessary use of all forms of drugs by all members of the family. 12 references.

**125863** Kushima, Katsushi; Hasegawa, Naoyoshi. Department of Obstetrics and Gynecology, Akita University, School of Medicine, Japan **Education of the psychosomatic medicine.** *Journal of Japanese Psychosomatic Society* (Tokyo). 12(2):90-93, 1972.

A general introduction to psychosomatic medicine in obstetrics and gynecology is presented. The introductory education, including the definition of psychosomatic diseases and their diagnosis is discussed. Methods for discriminating psychosomatic diseases from psychoses, neuroses, vegetative stigmata and other disorders are examined. Psychotherapy and pharmacotherapy are discussed as treatment methods for psychosomatic diseases.

**126937** Lehmann, Heinz E. McGill University, Verdun, Quebec, Canada **The impact of scientific models on clinical psychopharmacology: a psychiatrist's view.** *Seminars in Psychiatry*. 4(3):255-259, 1972.

In relating scientific models to clinical psychopharmacology it is suggested that the prototype of a model in medicine is really the diagnosis. The psychiatric diagnosis in particular is a hypothetical construct whereby whatever validity is claimed for tests and concurrent biochemical processes is construct validity rather than concurrent validity. The model may be analytical or synthetical. The test of the analytic model is whether it is true; of the synthetic model, whether it is productive. Some false but productive models in the history of science are discussed. It is suggested that whatever the mode of diagnosis, the individual's privileged access to his inner state of mind should be admitted as scientific evidence. 2 references.

**126938** Cole, Jonathan O. Tufts University School of Medicine, Medford, MA **The impact of scientific models on clinical psychopharmacology: a psychiatrist's view.** *Seminars in Psychiatry*. 4(3):261-264, 1972.

That some scientific models are too complex to be useful in psychiatric and psychopharmacologic research is tempered by the view that model manipulation and theory are an exhilarating experience. That some current explanations of drug



efficacy are inadequate to fully explain disease states or mechanisms of drug action suggests that future models may have to postulate long-term changes in feedback mechanisms rather than short-term effects on biogenic amines. Some recent accomplishments evolving from scientific models are reviewed as well as useful therapies not evolving from models. It is concluded that models are necessary and often useful but rarely lead logically to a major therapeutic advance. 6 references.

**126939** Hollister, Leo E. Veterans Administration Hospital, Palo Alto, CA *The impact of scientific models on clinical psychopharmacology: an internist's view.* 4(3):265-269, 1972. *Seminars in Psychiatry.*

The impact of scientific models on clinical psychopharmacology is discussed from an internist's point of view. Despite the recent infusion of more refined scientific methods, historically, advances in psychopharmacology have been made almost exclusively through empirical, naturalistic, or clinical observations. The clinical psychopharmacologist's major goal should be to develop hypotheses about drug - mind relationships and test them in clinical trials. The clinician is best qualified to relate facts which basic science discovers. This symbiotic relationship is necessary to build new models and to test them. An examination of the neurophysiologic model, learning model, neuroanatomic model, genetic model for schizophrenia, and the idea of a model psychosis presents advantages and disadvantages of each.

**126940** Lasagna, Louis. University of Rochester School of Medicine and Dentistry, Rochester, NY *The impact of scientific models on clinical psychopharmacology: a pharmacologist's view.* *Seminars in Psychiatry.* 4(3):271-282, 1972.

The impact of scientific models on clinical psychopharmacology is discussed. The fact that bad scientific models can be worse than no models at all is illustrated by a review of the elusive placebo reactor, an erroneous model based on a 1950 study. The volunteer error concept is also discussed along with the limitations of the controlled trial in experiments. That the objective is better than the subjective model is reviewed as well as information overload models. An experiment involving the latter is described. It is concluded that a negative approach to models serves to remind one that they can be harmful as well as helpful. 11 references.

**126990** Overall, John E.; Hollister, Leo E. University of Texas Medical Branch, Galveston, TX *Decisions about drug therapy II: expert opinion in a hypothetical situation.* *Behavioral Science.* 17(4):349-360, 1972.

The drug choices of experts in clinical psychopharmacology were studied in terms of their responses to case reports containing brief narrative histories and detailed symptom and behavior descriptions. The purposes of the study were to examine similarities and differences in the conceptions of appropriate indications for psychotherapeutic drugs and to develop a model of the consensus decision behavior. The several judges were found to behave similarly in their selections of drug treatments. Three major classes of drugs were consistently chosen for use with patients having distinctly different types of symptom profiles: phenothiazines, benzodiazepines, tricyclic antidepressants. Prototype clinical profiles representing the experts' conceptions of appropriate indications for antipsychotic, antianxiety and antidepressant drugs were derived, and a model of decision behavior representing the consensus of the judges was constructed. The study of clinical decision behavior in the manner of this investigation appears to have potential usefulness as another approach in clinical psychopharmacologic research. 6 references. (Author abstract modified)

**127878** Ayd, Frank J., Jr. *International Drug Therapy Newsletter*, 912 West Lake Avenue, Baltimore, MD 21210 *Haloperidol: fifteen years of clinical experience.* *Diseases of the Nervous System.* 33(7):459-469, 1972.

A summary of current knowledge of the assets and liabilities of haloperidol is presented. Uses in psychiatry, technique of therapy, use as an antiemetic and in pregnancy, cardiovascular effects, toxicity, overdosage, and interaction with other drugs are discussed. On the basis of 15 years of worldwide clinical experience with haloperidol, it is asserted that this neuroleptic is a safe and effective drug. Although it is comparable to other potent neuroleptics as regards effectiveness, to date it appears to be less toxic than most and may benefit optimally some patients refractory to all previous psychoactive therapy. 111 references. (Author abstract modified)

**128105** Kline, Nathan S.; Davis, John M. New York University School of Medicine, New York, NY *Psychotropic drugs.* *American Journal of Nursing.* 73(1):54-62, 1973.

In the past 15 years psychiatry has undergone a therapeutic revolution due to the discovery of new psychotropic drugs. These fall into various categories. Antipsychotic drugs refers to a family of drugs called phenothiazine derivatives. On a behavioral level they make schizophrenic patients less schizophrenic and less psychotic. Antidepressant drugs fall into two families, tricyclic drugs and monoamine oxidase (MAO) inhibitors. Minor tranquilizers are used to lessen anxiety without causing troublesome sedation. Lithium carbonate is used to treat acute manic attacks and to prevent, when given on a maintenance basis, the recurrence of manic depressive episodes. All of these drugs have various side effects which are described in detail and appropriate forms of treatment for them are suggested. 4 references.

**129383** Pitts, Ferris N., Jr. no address **Medical aspects of ECT.** *Seminars in Psychiatry.* 4(1):27-32, 1972.

A selective review of recent progress in medical aspects of electroconvulsive therapy (ECT) emphasizing systematic studies of the various procedures in drug modified ECT is presented. The systematic studies considered were undertaken to determine the safest and most reliable drug modification regimen. To date, the evidence supports a specific regimen of 1.0mg s.c. atropine 30-60 min before ECT anesthesia with methohexital (0.75mg/kg body weight in 5% solution by rapid intravenous push) and succinylcholine (0.5mg/kg in 0.2% solution by rapid intravenous push immediately after methohexital), with the injection of succinylcholine followed in 50 sec by the electrical stimulus. Yet to be precisely compared in this regimen are appropriate dosages of propomid and diazepam. 26 references.

**129401** Van Praag, H. M. Department of Biological Psychiatry, State University, Groningen, The Netherlands **Biologic psychiatry in perspective: the dangers of sectarianism in psychiatry. v. Some inferred trends.** *Comprehensive Psychiatry.* 13(5):401-410, 1972.

Four trends in biologic psychiatry are outlined, two of which may have important therapeutic implications. The trends are: psychopharmacology; accident and strategy; intracerebral stimulation; human ethology; and functional psychopathology. A plea is made for human brain and behavior research. Individuals with behavior disorders are best served by a therapist who has an understanding of all available therapeutic methods and has

learned to determine their indications and apply them with adequate proficiency. He must be aware of his own limitations and understand when the time has come to call for the assistance of therapeutic superspecialists. A therapist must have sufficient basic theoretical knowledge to absorb new therapeutic views and developments. 19 references.

**130473** Dawson, E. B.; Moore, T. D.; McGanity, W. J. Department of Obstetrics and Gynecology, University of Texas Medical Branch, Galveston, TX **Relationship of lithium metabolism to mental hospital admission and homicide.** *Diseases of the Nervous System.* 33(8):546-556, 1972.

A statistically significant mathematical relationship was demonstrated between the drinking water content and the renal excretion of lithium in persons over 16 years of age. The lowest lithium levels in drinking water and urine occur in the northeast corner of Texas and increase progressively across the state to the highest levels in southwest Texas. A quantitative relationship exists between both community lithium ingestion via tap water and excretion, and both first and secondary county admission rates to state mental hospitals. This relationship includes those major forms of mental illness diagnosed, tabulated, and reported as schizophrenia, psychosis, neurosis, and personality problems. In addition, county homicide rates were markedly reduced proportional with increasing lithium ingestion and excretion. Apparently water soluble lithium is present in the soil, predominantly in the wester half of Texas. Varying with rainfall, such lithium is leached out of the soil and may be found in community drinking waters. Depending upon the quantity of lithium ingested, absorbed by the body, utilized by tissue cells and finally excreted, it would seem that the populace of any community should derive a prophylactic benefit with respect to the four major forms of mental illness and to homicidal tendencies. 31 references. (Author abstract modified)

**130575** Shochi, Katsuhito. Fukuoka University of Education, Fukuoka, Japan **Various problems in application of hypnosis: hypnosis by narcotics.** In: Naruse, G., *Hypnotherapy: Saimin Ryoho.* Tokyo, Bunkodo, 1972. 334 p. (p. 68-71).

Various narcotics utilized in drug hypnosis are discussed: chloroform; cannabis; medinal; evipan sodium; sodium pentotal; isomytal; and amytal.

Narcotics increase the patient's suggestibility and provide a good condition for hypnosis.

**132623** Dumont, Matthew P.; Lewis, David C. Massachusetts Department of Mental Health, Boston, Mass. /The cure-all fallacy: dangers of over prescribing./ The 'Magic Bullet' Syndrome. Massachusetts Journal of Mental Health. 2(2):30-34, 1972.

Prescribing practices of physicians are examined, particularly the excessive prescribing of tranquilizers, amphetamines and barbiturates. Three reasons for excessive prescribing are given. The physician has not been taught to tell patients that their symptoms do not warrant medication. The patient is led to believe that the physician is omnipotent and therefore expects a cure for every symptom. Physicians are influenced by the multi-million dollar pharmaceutical industry which urges the dispensation of more and more medication. 2 references.

**132957** Fann, William E.; Linton, Patrick H. P.O.Box 3812, Duke University Medical Center, Durham, NC 27710 Use of perphenazine in psychiatric emergencies: the concept of chemical restraint. Current Therapeutic Research. 14(8):478-482, 1972.

A technique is described for managing severely disturbed patients without using mechanical or isolation procedures. By using large doses of perphenazine, sufficient control of behavior can be achieved to allow maintaining the patient in the total treatment program in a general hospital or open ward situation. Eight years of usage has shown that perphenazine allowed control of hyperactivity without significantly reducing mental clarity. All cases of severe dystonic reactions responded completely to intravenous methylphenidate. Only short-term use of the drug is advocated, as deleterious effects of phenothiazines on skin, eyes and nervous system have not been reported as following only short-term therapy. 11 references. (Author abstract modified)

**133098** Kety, Seymour S. Harvard Medical School, Cambridge, MA Julius Axelrod: a triumph for creative research. In: Snyder, Perspectives in neuropharmacology: tribute to J.Axelrod. New York, Oxford University Press, 1972. 404 p. (p.3-7).

A brief biography of Julius Axelrod focuses on his studies and achievements in research. A major segment of neuropharmacology and experimental psychiatry is based upon his elucidation of the biochemical and physiological processes involved in the storage, release, and inactivation of norepinephrine at the adrenergic synapse, which has made possible an understanding of the role of that amine in neurotransmission and a clarification of the mechanism of action of numerous drugs and hormones which affect adrenergic activity. Based on his work, knowledge of the metabolism of the catecholamines was expanded to include characterizations of their major and minor pathways and metabolites. His studies of the effects of psychotropic drugs on the uptake of 3H-norepinephrine by sympathetically innervated tissue led to his recognition of the most important mechanism for the inactivation of norepinephrine at the adrenergic synapse. He presented evidence for the regulation of biogenic amine synthesis under environmental variations throughout various parts of the body, especially the pineal gland.

**133110** Snyder, Solomon H. Department of Pharmacology and Experimental Therapeutics, Johns Hopkins University School of Medicine, Baltimore, MD Perspectives in neuropharmacology: a tribute to Julius Axelrod. New York, Oxford University Press, 1972. 404 p.

This book contains 12 papers which combine the presentation of original work with a review of previous research in area of neuropharmacology. The topics include: recent breakthroughs in the isolation of a cholinergic receptor; catecholamine disposition in the brain and peripheral nervous system; a possible neurotransmitter role for histamine; chemical sympathectomy; hypertension and the sympathetic nervous system; brain monoamine biosynthesis; the metabolism of gamma-aminobutyric acid in inhibitory nerves; and interaction of estrogens, progestational agents, and androgen with brain and pituitary. 1317 references.

**133482** König, Liesbeth. Neurologisch-Psychiatrische Klinik, Medizinische Akademie 'Carl Gustav Carus', 8019 Dresden, Fetscherstrasse 74, Germany /Clinical psychopharmacological assessment and long-term observation using electronic data processing./ Klinische Psychopharmakabewertung und Langzeitbeobachtung unter Einsatz der EDV.



Psychiatrie, Neurologie und medizinische Psychologie (Leipzig). 24(1):15-26, 1972.

The application of data processing to the assessment of psychopharmaceutical effects is discussed. The use of the computer in clinical test evaluation enriches the research program by the addition of statistical information of a precise and far reaching value. The computer program is also helpful in the establishment of the parameters of the experimental design. The difficulties which are encountered in the evaluation of the drug and its side-effects in psychiatric patients can be overcome, to a certain extent, by the variety of measuring instruments that have been developed and the processing of the data by a computer. Examples of models used in the evaluation of symptoms are presented; the advantages enumerated include a definite evaluation on a yes or no basis, and the possibility of controlling the dosage level; this is particularly important in lithium therapy. 18 references.

# AUTHOR INDEX

[The 6-digit number is the abstract accession number. The next two digits are the issue number; digits after hyphen are the category number.]

## A

ABREU LA 123663 02-03  
 ABREU RR 123663 02-03  
 ACCORNERO N 133517 02-11  
 ADAMS PM 131445 02-04  
 ADAMS RN 122237 02-03  
 ADAMS WJ 121882 02-04  
 ADLER N 126902 02-12  
 ADMIRAND WH 121580 02-13  
 AGHAJANIAN GK 124188 02-03  
 AGNOLI A 133517 02-11  
 AGULNIK PL 129509 02-15  
 AHLENIUS S 120013 02-04  
 AHLERS RH 120556 02-04  
 AIROLDI L 119302 02-03  
 AKERA T 118913 02-03  
 AKERMAN SBA 122182 02-03  
 AKSHABAYEVA KA 121876 02-03  
 ALBERS JW 133071 02-11  
 ALBERT ML 120853 02-13  
 ALCARAZ M 133743 02-03  
 ALEKSANDROVSKIY YA 133506 02-13  
 ALEKSIDZE NG 133674 02-04  
 ALEXANDER L 119762 02-09, 127517 02-14  
 ALIAS AG 118934 02-08  
 ALLEN C 124143 02-14  
 ALLEN RP 120822 02-09  
 ALLERS G 133173 02-07  
 ALLON GA 120821 02-13  
 ALLTOP LB 127216 02-09  
 ALPERS HS 120359 02-03  
 ALTON H 122166 02-13  
 ALVAREZ-LEEFMANS J 133471 02-04  
 AMIN M 122976 02-09  
 ANANTH JV 120263 02-08, 131571 02-08  
 ANDERSON C 120103 02-04  
 ANDERSON EG 121963 02-03, 121964 02-03  
 ANDREAS W 121602 02-08  
 ANDREOLI VM 119983 02-03  
 ANDREWS WM 121902 02-08  
 ANGELETTI PU 132645 02-03  
 ANGST J 133351 02-08  
 ANGUS JWS 122976 02-09, 130669 02-08  
 ANKERMANN H 133297 02-01  
 ANSARI KA 119029 02-13  
 ANTPOUL W 122245 02-03  
 APPEL JB 124223 02-04  
 ARCHIBALD HD 120735 02-17  
 ARENGO AD 130669 02-08  
 ARIKAWA K 129088 02-11  
 ARNOLD EA 120218 02-03  
 ARNOLD EL 118853 02-03  
 ARNOLD LE 128875 02-11, 129834 02-14  
 ARNOLD PJ 126231 02-15  
 ASHBY P 122102 02-13  
 ASHER WL 132958 02-11, 132959 02-15  
 ASKEW WE 119305 02-03  
 ASTRAKHANTSEVA LZ 133857 02-13  
 ATKINSON R 133214 02-03  
 AUSTIN GM 127340 02-13  
 AVILES L 133307 02-13  
 AXELROD J 122221 02-03, 124171 02-03, 126244 02-03, 126935 02-03, 132369 02-03  
 AYD FJ 120727 02-07, 127878 02-17, 128341 02-11  
 AYMARD N 122313 02-13  
 AZZARO AJ 120360 02-03

## B

BABBINI M 127528 02-04  
 BACK KC 118853 02-03, 120218 02-03  
 BAGGOT JD 133780 02-13  
 BAILEY JE 120994 02-13  
 BAILEY RL 127405 02-15  
 BAK IJ 133527 02-03  
 BAKER AB 121884 02-14  
 BAKER GF 121402 02-03  
 BAKER M 132989 02-09  
 BAKER WW 133302 02-02  
 BALAGURA S 130355 02-03  
 BALDESSARINI RJ 119304 02-03, 120524 02-03, 121990 02-13

BAN TA 119170 02-13, 119171 02-09, 120263 02-08, 130668 02-11, 131571 02-08  
 BANKIER RG 130474 02-08  
 BARAN L 120017 02-04  
 BARBAZ BS 133133 02-04  
 BARBEAU A 133807 02-13  
 BARKER GJ 128338 02-04  
 BARLOW CF 122177 02-03  
 BARNES L 132690 02-03  
 BARNETT A 133213 02-03  
 BARO F 133355 02-08  
 BARR HL 120479 02-12  
 BARRATT ES 131445 02-04  
 BARRETT RJ 131436 02-04, 133377 02-04  
 BARRY H 120831 02-03  
 BARRY TJ 127520 02-13  
 BARTHOLOMI G 133175 02-13  
 BARTOLETTI M 127528 02-04  
 BARTOLINI A 121296 02-03  
 BARTOSEK I 122167 02-03  
 BATES JE 120118 02-08  
 BAUER RH 120016 02-04  
 BAUMGARTEN HG 120813 02-03  
 BEACONSFIELD P 133055 02-13  
 BEAL JL 133215 02-03  
 BEALL JR 121579 02-05  
 BEART PM 120809 02-03  
 BEATTY WW 120103 02-04  
 BEAUDOUIN J 133173 02-07  
 BECK M 133351 02-08  
 BECK U 133569 02-03  
 BECKLES ED 130669 02-08  
 BEDNARCZYK JH 120358 02-03  
 BELETSKAYA RP 133674 02-04  
 BELL JA 121963 02-03  
 BENKERT O 120019 02-04, 133262 02-11  
 BENNETT MVL 121966 02-03  
 BENOR D 121403 02-12  
 BERENDES J 127876 02-13  
 BERGEN JR 124174 02-03  
 BERGER BD 121174 02-03, 123983 02-04  
 BERGER HJ 122448 02-03  
 BERGER JE 122049 02-15  
 BERKELEY AW 119762 02-09  
 BERNASCONI S 122396 02-03  
 BERNDT S 124170 02-03  
 BERRY CA 132686 02-03  
 BEST PJ 120556 02-04  
 BETETA E 132986 02-11  
 BEVAN JONES AB 120939 02-13  
 BEY DR 127390 02-09  
 BEYER C 133714 02-04  
 BHARGAVA V 133380 02-04  
 BIALER I 121449 02-14  
 BIANCHI GN 119984 02-10  
 BIANCHINE JR 121301 02-11  
 BICHONSKI R 133076 02-03, 133463 02-13  
 BIELMANN P 133220 02-07, 133221 02-07  
 BIGNAMI G 122039 02-04  
 BILLINGS DK 122398 02-04  
 BINIEK E 133353 02-11  
 BIRNER RB 125359 02-01  
 BISHOP MP 134197 02-08  
 BIZOUARD P 133173 02-07  
 BJORUM N 134310 02-15  
 BLACKWELL B 122193 02-14  
 BLAINE JD 121212 02-15  
 BLAKE JW 119053 02-06  
 BLANK CL 122237 02-03  
 BLINDER MG 133625 02-13  
 BLOCH V 132159 02-04  
 BLOOM FE 120487 02-17  
 BLOOM JM 131279 02-04  
 BLOSCH M 133381 02-04  
 BLUM A 133265 02-13, 133350 02-15  
 BLUM K 118988 02-03, 119173 02-04, 134043 02-03  
 BLUMBERG AG 126232 02-09  
 BOHUS B 122450 02-04  
 BOISSIER JR 123937 02-04, 133296 02-02  
 BOLDINA IG 125263 02-03  
 BONAGURA V 122229 02-03  
 BOND ML 133309 02-03  
 BONDARENKO TT 134457 02-03

BORDY TM 118913 02-03  
 BORNSCHEUER B 133353 02-11  
 BOROSNE J 123885 02-10  
 BOSHEK RL 133133 02-04  
 BOTEZ MI 133807 02-13  
 BOTS GTAM 130019 02-15  
 BOUCHARLAT J 132753 02-11  
 BOULLIN DJ 119968 02-11  
 BOULTER WV 122193 02-14  
 BOURGEOIS M 122314 02-15  
 BOUSQUET WF 122247 02-03  
 BOUTTIER D 121855 02-11  
 BOWERS MB 126219 02-12, 126220 02-13  
 BOYD J 120822 02-09  
 BOYD NF 121478 02-15  
 BOYD R 121986 02-07  
 BRAGINA NN 133506 02-13  
 BRAMBILLA G 119983 02-03  
 BRANDAW K 124171 02-03  
 BRAUDE MC 121284 02-06, 132372 02-15  
 BRAWLEY P 120926 02-13  
 BREESE GR 120362 02-03, 127216 02-09  
 BREGMAN NJ 122390 02-04  
 BREWER C 122884 02-15  
 BREYER U 121198 02-03  
 BRIGGS I 121307 02-12, 133304 02-02  
 BRISCOE W 120267 02-09  
 BROCHMANN-HANSEN E 133744 02-06  
 BRODIE KH 134119 02-15  
 BROECKAMP C 122395 02-04  
 BRONAUGH RL 121634 02-03  
 BROOKS DC 132684 02-03, 132685 02-03  
 BROOKS PW 126205 02-09  
 BROWN CR 121985 02-07  
 BROWN JH 132869 02-11, 133293 02-04  
 BROWN WL 125961 02-14, 125962 02-14  
 BRUST-CARMONA H 133471 02-04  
 BUCCI L 133624 02-04  
 BUCHEIT J 132903 02-07  
 BUCKLEY JP 122394 02-05  
 BUGARD P 121895 02-11  
 BUKOWCZYK A 133137 02-11  
 BUKSOWICZ C 132805 02-07  
 BUNNEY WE 122980 02-09, 127217 02-09, 132989 02-09, 134119 02-15  
 BURDOCK EI 133263 02-07  
 BURESOVA M 132695 02-03  
 BURKHARDT DA 121968 02-03  
 BURNS CR 124068 02-11  
 BURNSTOCK G 132656 02-03  
 BUSHING JA 121354 02-03  
 BUTCHER LL 120231 02-03, 121316 02-04  
 BUTTERWORTH AT 134326 02-15  
 BUXBAUM DM 122200 02-04  
 BYCK R 125969 02-09

## C

CABBAT F 122229 02-03  
 CAFFEY E 120699 02-08, 122662 02-08  
 CALDWELL DF 127693 02-03  
 CALHOUN WH 120097 02-04, 121277 02-04, 131285 02-04  
 CAMER SJ 119039 02-15  
 CAMERON OG 124223 02-04  
 CAMPBELL JM 120823 02-15  
 CAMPBELL M 131003 02-11  
 CANDY J 121979 02-15  
 CANNON EH 126225 02-13  
 CANO JP 123636 02-13  
 CAPPARELL HV 121261 02-17  
 CAPPELL H 122178 02-14, 130364 02-04  
 CAPUTI AP 122232 02-03  
 CARAMIA F 132645 02-03  
 CARAPPELLOTTI RA 120012 02-03  
 CARDEN TS 122079 02-17  
 CARDER B 131281 02-04, 133770 02-04  
 CARDON PV 131610 02-14  
 CARDOZO C 123934 02-04  
 CARLE R 132718 02-08  
 CARLINI EA 119981 02-04, 133522 02-04  
 CARLQUIST U 125029 02-13  
 CARNEGIE PR 128457 02-13  
 CAROUGE D 133172 02-11

CARRANZA-ACEVEDO J 132717 02-10  
CARRILLO C 126232 02-09  
CARTER TN 134327 02-05  
CASACCHIA M 133517 02-11  
CASE Q 119969 02-15  
CASE WG 123933 02-10  
CASPARY EA 128457 02-13  
CASSANO GB 133218 02-11  
CASSEBAUM L 122229 02-03  
CASTILLO S 119303 02-03  
CASTLE MC 121243 02-03  
CASTROGIOVANNI P 133218 02-11  
CATTABENI F 120529 02-01, 126248 02-01  
CAVERO I 122394 02-05  
CELESIA GG 122253 02-14  
CHABOT D 125809 02-14  
CHACON C 127856 02-08  
CHANG T 122235 02-03  
CHANG-YIT RH 134101 02-04  
CHAPMAN RE 127390 02-09  
CHASE TN 119030 02-03, 122255 02-14, 125367 02-11  
CHATURVEDI AK 133745 02-03  
CHAUDHARI A 133745 02-03  
CHEKMAN IS 133959 02-03  
CHEN CH 118987 02-09  
CHENEY DL 122184 02-04  
CHERNAT R 123937 02-04  
CHERNIK DA 132954 02-13  
CHERNOV HI 133133 02-04  
CHIEN C 122704 02-11, 126229 02-14, 129833 02-13, 134112 02-09  
CHING N 119039 02-15  
CHRISTENSEN F 122169 02-03  
CHRISTENSEN JG 132706 02-03  
CHYZANOWSKI W 133462 02-07  
CHUDINA EK 133505 02-03  
CHUHAI HM 121878 02-03  
CHUNG HR 123933 02-10  
CIA A 132955 02-07  
CLARK AG 121355 02-03  
CLARK ML 122209 02-08, 126227 02-08  
CLYMAN RC 133576 02-12  
COATES GH 120236 02-03  
COFFIN C 133348 02-13  
COHEN G 122229 02-03  
COHEN SL 119762 02-09  
COHRSEN JJ 121212 02-15  
COLBURN RW 119030 02-03  
COLE JO 120121 02-08, 122704 02-11, 126229 02-14, 126938 02-17, 127184 02-11, 129833 02-13, 134112 02-09  
COLE SO 122956 02-04, 123008 02-13  
COLLINS GGS 120939 02-13  
COLLINS P 131003 02-11  
COLLINS S 122209 02-08  
CONDELL Y 134101 02-04  
CONFORTI N 133294 02-03  
CONNERS CK 121989 02-14  
CONNEY AH 119048 02-04  
CONSBURCH U 133356 02-13  
CONSOLO S 120232 02-03  
CONSROE PF 122026 02-04  
CONSTANTINE JW 133182 02-03  
CONTRERAS E 119303 02-03  
COOLS AR 122195 02-04  
COOPER JR 120487 02-17  
COOPER SD 119001 02-03  
COPER H 133265 02-13  
COPPEN A 120994 02-13, 120995 02-09  
CORKE AM 120835 02-13  
CORRODI H 132703 02-03  
COSTA E 120529 02-01, 120832 02-03, 126248 02-01, 129461 02-03, 132363 02-03, 132367 02-03, 132368 02-03  
COSTALL B 121274 02-03, 122573 02-03, 122575 02-03  
COSTANZO DJ 121507 02-04  
COSTILOE JP 126227 02-08  
COTTON PB 120200 02-15  
COTZIAS GC 122445 02-11  
COUSSENS WR 126906 02-04  
COWEN MA 127519 02-13  
COX B 120236 02-03  
CRAIG AL 120364 02-03  
CRAIG CR 120360 02-03  
CRANE GE 127389 02-11  
CRAVES FB 127693 02-03  
CRAVEY RH 122440 02-15

CRAWFORD RJM 122881 02-15  
CROUGHAN J 120267 02-09  
CROWDER WF 126906 02-04  
CROWLEY TJ 130644 02-03  
CSANALOSI I 123933 02-10  
CSIKY C 133011 02-14  
CSIKY K 133011 02-14  
CUNDALL RL 126205 02-09  
CURTIS DR 121967 02-03

**D**

DAHLSTROM A 121283 02-03  
DAIRMAN W 132706 02-03  
DALZELL BC 132878 02-06  
DALZELL HC 132878 02-06  
DAM M 119002 02-03  
DANGMAN K 122229 02-03  
DANIEL D 121403 02-12  
DANIELS D 119442 02-04  
DARBY FJ 121181 02-03  
DASBERG H 123884 02-13  
DATTI RK 122245 02-03  
DAVIDSON J 122884 02-15  
DAVIS HN 120009 02-04  
DAVIS JM 118931 02-04, 120729 02-15, 121214 02-13, 122989 02-03, 128105 02-17, 133123 02-15  
DAVIS LE 133780 02-13  
DAVIS WM 122399 02-03, 126906 02-04  
DAWSON EB 130473 02-17  
DAWSON S 124257 02-17  
DE GROAT WC 132153 02-03  
DE JAGER NST 121478 02-15  
DE LUCA K 122019 02-11  
DE MENDOZA JJ 124160 02-03  
DE WIED D 133753 02-04  
DEDICOVA A 132695 02-03  
DEEM MA 129494 02-11  
DEFEUDIS FV 132777 02-03  
DEKRAMENJIAN H 120992 02-13, 120993 02-13  
DEL BIANCO PL 133749 02-13  
DELPHIA JM 122236 02-03  
DEMBIEC D 122229 02-03  
DEMENT W 119391 02-03, 122036 02-04  
DEMENT WC 124143 02-14  
DEMERS RG 120822 02-09  
DER MARDEROSIAN A 120012 02-03  
DETRE T 125969 02-09  
DEVITO AJ 119246 02-13  
DEWEER B 132159 02-04  
DEWEY WL 122242 02-04, 132719 02-03, 132878 02-06, 133290 02-05  
DEWSBURY DA 120009 02-04  
DEYHLE G 133265 02-13  
DEYKIN EY 125968 02-10  
DI CARLO FJ 133685 02-13  
DI CHIARA G 122284 02-03  
DI GIUSTO EL 122059 02-03  
DI MASIO A 129509 02-15  
DI SCIPIO WJ 128349 02-08  
DIAZ J 123938 02-03  
DICKSON DE 123841 02-01  
DIETZ RE 132958 02-11  
DIMASCCIO A 120655 02-17  
DIMASCCIO A 125968 02-10  
DIONNE RA 122181 02-03  
DISSEZ C 133172 02-11  
DIXON WJ 133644 02-16  
DODA M 133295 02-03  
DOM R 133355 02-08  
DOMINGUE D 132718 02-08  
DOMINO EF 121296 02-03, 122078 02-04, 133474 02-03  
DOMZAL T 132808 02-11  
DONELLI MG 122167 02-03  
DOSHI J 121288 02-15  
DOTEUCHI M 129461 02-03, 132367 02-03  
DOUGLAS VI 122198 02-11  
DOUST JW 128347 02-08  
DOWNING QA 121302 02-03  
DOWNING RW 122426 02-14  
DOWNS D 123934 02-04  
DOWZENKO A 132805 02-07  
DRASKOCZY PR 127215 02-09, 130109 02-09  
DRAVET C 123636 02-13  
DREW WG 119034 02-14  
DREYFUSS J 133718 02-13  
DROSSMAN AK 120698 02-08

DRY J 121896 02-11  
DUBY SE 122445 02-11  
DUFAY F 133173 02-07  
DUFFIELD JC 120926 02-13  
DUFOUR H 122315 02-09, 133265 02-13  
DUMONT AP 132623 02-17  
DUNNER DL 134111 02-09  
DUVOISIN RC 120855 02-13  
DYER DC 132994 02-13  
DZIAK J 122394 02-05

**E**

EADE NR 132893 02-03  
EBERT MH 132972 02-09  
EDELSTEIN EL 128463 02-13  
EDWARDS JG 122976 02-09  
EHRENSTEIN W 132785 02-14  
EICHELMAN B 132680 02-04  
EIDELBERG E 133309 02-03  
EISENBERG L 121988 02-14  
EISENBERG JJ 133175 02-13  
EKBOM K 133516 02-15  
EL-YOUSEF M 121216 02-13, 133123 02-15  
ELBERT R 124170 02-03  
ELDER T 122957 02-04  
ELIE R 133220 02-07  
ELLIOTT HW 118999 02-03  
ELSMORE TF 122194 02-04  
ENDRENYI L 130364 02-04  
ENGEL J 120013 02-04  
ENGELHARDT DM 134204 02-08  
ENGLAND AC 131948 02-11  
ENGLERT LF 120814 02-04, 121318 02-03  
EPER E 120824 02-08  
EPSS JE 133685 02-13  
EPSS LD 127418 02-13  
ERANKO L 132656 02-03  
ERANKO O 132656 02-03  
ERWIN VG 121634 02-03  
ESCANDE M 132752 02-11  
ESTEVEZ V 121318 02-03  
ESTRADA SD 133094 02-09  
ETRYCHOVA J 132695 02-03  
EVANS A 133128 02-03  
EVANS BD 120012 02-03  
EVANS JE 132682 02-04  
EVANS JJ 126197 02-14  
EVANS JR 120118 02-08, 126228 02-08  
EVANS R 119045 02-09, 132995 02-15

**F**

FAHN S 128336 02-11  
FAHNDRICH C 133265 02-13, 133352 02-03  
FAHNDRICH E 133265 02-13  
FAIBISH GM 132887 02-09  
FAINGOLD CL 132686 02-03  
FALEK A 126231 02-15  
FALENI R 132955 02-07  
FALES HM 119022 02-06  
FALICKI Z 133462 02-07  
FALK JL 130382 02-03  
FANCIULLACCI M 133749 02-13  
FANN WE 120729 02-15, 121216 02-13, 132957 02-17, 133123 02-15  
FAVAREL-GARRIGUES B 122314 02-15  
FAVAREL-GARRIGUES J 122314 02-15  
FAWCETT J 120992 02-13, 120993 02-13  
FAZZARO J 129619 02-04  
FEIGELMAN BH 132951 02-07  
FEIGHNER JP 120267 02-09, 120526 02-03  
FEIST MM 133133 02-04  
FELDMAN HS 119758 02-14  
FELDMAN S 122241 02-03  
FENNESSY MR 119037 02-03, 132779 02-03  
FERRAR-ALLADO T 133743 02-03  
FERRARO DP 122398 02-04, 126242 02-04, 131450 02-04, 133171 02-04  
FERREY G 121855 02-11  
FERTZIGER A 132528 02-03  
FEUER G 119001 02-03  
FICKER F 133315 02-07  
FIELD EJ 128457 02-13  
FIEVE RR 134111 02-09  
FINK Z 125256 02-03  
FISCHER E 133622 02-03  
FISCHER P 133347 02-14  
FISH B 131003 02-11



FISHBEIN W 121986 02-07  
 FISHER S 126934 02-06  
 FITZGERALD RG 130388 02-09  
 FLANIGAN WF 124225 02-03  
 FLEMENBAUM A 131348 02-15  
 FLEMING DE 122062 02-03  
 FLEYS EP 133506 02-13  
 FLIESEN W 133220 02-07  
 FLORIO V 130361 02-03  
 FLOYD A 118986 02-08  
 FLYNN A 122228 02-04  
 FODOR M 133295 02-03  
 FORBES D 118931 02-04  
 FORD RD 122242 02-04  
 FORREST IS 123033 02-03, 132370 02-06  
 FORREST WH 121985 02-07  
 FOSSET MT 123937 02-04  
 FOURNIE H 132752 02-11  
 FRAIBERG PL 120730 02-14  
 FRANCHI G 133749 02-13  
 FRAND UI 118897 02-15, 121218 02-15  
 FRANK IM 127418 02-13  
 FREED EX 129619 02-04  
 FREEDMAN N 134204 02-08  
 FREEDMAN PE 121276 02-04  
 FREEMAN AE 121287 02-03  
 FREEMAN H 122885 02-08, 132956 02-07  
 FREESSE AL 132951 02-07  
 FREI M 133351 02-08  
 FREUND J 122229 02-03  
 FRIEDLI P 133175 02-13  
 FRIEDMAN E 120228 02-03  
 FRITCHE GE 120814 02-04  
 FROSCH WA 120698 02-08  
 FUJITA S 128952 02-08  
 FUKUDA T 131056 02-02  
 FUKUI H 130912 02-03, 131056 02-02  
 FUKUI K 119033 02-03  
 FULLER GC 122247 02-03  
 FULLER RW 119031 02-03, 119058 02-04, 119306 02-03, 121204 02-03, 133212 02-03  
 FUSEK J 125256 02-03  
 FUXE K 132703 02-03  
 FYRO B 132683 02-03

## G

GADDIE J 133719 02-15  
 GAIARDI M 127528 02-04  
 GALANTER IM 131610 02-14  
 GALANTER M 132977 02-08  
 GALATULAS I 133751 02-03  
 GALLAGHER BB 132710 02-13  
 GALLANT DM 134197 02-08  
 GAME CJA 121967 02-03  
 GANT D 132994 02-13  
 GARATTINI S 119302 02-03, 120232 02-03, 122243 02-03  
 GARRETT RL 133293 02-04  
 GASTAUT H 123636 02-13  
 GATTRINGER B 133518 02-11  
 GAURON EF 134104 02-04  
 GAY GR 125278 02-17  
 GAYRAL L 132752 02-11  
 GEISSBUHLER F 133175 02-13  
 GELLER I 118988 02-03, 119173 02-04, 120399 02-05, 134043 02-03  
 GENDREAU P 123297 02-14  
 GENT AE 120200 02-15  
 GERCKE H 121900 02-09  
 GERKER GJ 131446 02-04  
 GERMAIN D 119684 02-03  
 GERSHON ES 127215 02-09, 127217 02-09  
 GERSHON MD 132684 02-03, 132685 02-03  
 GERSHON S 118986 02-08, 120228 02-03, 120230 02-03, 120754 02-13, 122569 02-04, 124330 02-13, 133263 02-07  
 GESSA GL 122284 02-03  
 GEYER MA 121370 02-04  
 GHEZZI D 122243 02-03  
 GIANNELLI S 119039 02-15  
 GIBALDI M 122241 02-03  
 GILISSEN L 120789 02-04  
 GILLIN JC 119394 02-13  
 GILLIS RA 122181 02-03  
 GINGRICH RL 119035 02-10  
 GINSBERG J 133055 02-13  
 GINSBERG R 122178 02-14  
 GINSBURG AD 121478 02-15  
 GIUDICELLI S 132766 02-07  
 GLAUMANN H 124120 02-03  
 GLAZKO AJ 122235 02-03  
 GLICK S 133726 02-04  
 GLICK SD 125538 02-04, 133679 02-04  
 GLISSON SN 118931 02-04, 132690 02-03  
 GLOBUS GG 121986 02-07  
 GLOTZNER FL 133354 02-13  
 GO SH 122976 02-09  
 GOLDBERG SC 120084 02-08, 120698 02-08, 131963 02-08  
 GOLDSTEIN A 122184 02-04  
 GOLDSTEIN J 133213 02-03  
 GOLDSTEIN MJ 120118 02-08, 126228 02-08  
 GOLUB AM 131448 02-04  
 GOLUB M 131280 02-04  
 GOMEZ A 133471 02-04  
 GONCALVES N 122199 02-07  
 GONZALEZ C 133522 02-04  
 GONZALEZ LP 122957 02-04  
 GONZALEZ-BARCENA D 121280 02-13  
 GOODALL M 122166 02-13  
 GOODWIN DW 127406 02-13, 133603 02-11  
 GOODWIN FK 122980 02-09, 125200 02-09, 127217 02-09, 132972 02-09, 132989 02-09, 134119 02-15  
 GORDON EK 122980 02-09  
 GORDON MW 126500 02-09  
 GORMLEY WT 118853 02-03, 120218 02-03  
 GOTT CT 129423 02-04  
 GOTTSMANN C 124160 02-03  
 GOTTSCHALK LA 127857 02-14  
 GOULD MH 122078 02-04  
 GOULSTON K 121779 02-17  
 GRAB EL 127215 02-09  
 GRAHAM CW 130110 02-04  
 GRAHAM LT 133716 02-02  
 GRAINGER GJ 121309 02-10  
 GRALNICK A 120823 02-15  
 GRAM LF 132189 02-09  
 GRANT FW 122246 02-01  
 GRANT JK 132870 02-13  
 GRANT MJ 120097 02-04  
 GRANTHAM PH 121265 02-03  
 GRATCH MI 130475 02-10  
 GRAY BM 130475 02-10  
 GREEN DE 132370 02-06  
 GREEN R 119394 02-13, 124257 02-17, 132977 02-08  
 GREEN WF 133305 02-03  
 GREENBERG LM 129494 02-11  
 GREENBERGER DV 120233 02-03  
 GREENBLATT DJ 118899 02-15  
 GREENE J 122246 02-01  
 GREENSTEIN S 133679 02-04  
 GREENWALD EK 121289 02-03  
 GREENWOOD DT 120011 02-03  
 GREVEN HM 133753 02-04  
 GREWAL RS 120234 02-03  
 GRILLY DM 131450 02-04  
 GRINBERG-ZYLBERBAUM J 133471 02-04  
 GRISHAM MG 133171 02-04  
 GROESBECK CJ 122708 02-12  
 GROH RH 120269 02-15  
 GROSSMAN SP 127344 02-04, 132117 02-04  
 GROSSMANN W 132681 02-03  
 GRUBNER I 133297 02-01  
 GRUENER R 119162 02-03  
 GUAITANI A 119302 02-03, 122167 02-03  
 GUCLU B 132896 02-08  
 GUERRERO-FIGUEROA R 134197 02-08  
 GUHA SR 133763 02-03  
 GUNNE L 122443 02-03  
 GUTTMAN M 119000 02-03  
 GUVEN F 120824 02-08  
 GUZMAN-FLORES C 133743 02-03  
 GYORGY L 133295 02-03

## H

HAARMANN K 134559 02-10  
 HAAVIK CO 120235 02-03  
 HACKENBERG H 122091 02-03  
 HADASS H 133352 02-03  
 HADICK DG 121177 02-04  
 HAHN JW 118988 02-03  
 HAHN RA 133215 02-03  
 HAJEK I 132695 02-03  
 HAKIM C 122316 02-13  
 HALL K 120081 02-14, 129838 02-08  
 HALL RCW 129967 02-15  
 HALLIDAY B 118999 02-03  
 HALMI KA 129445 02-13  
 HALPERN LM 123632 02-03, 123633 02-03  
 HAMMACK D 127519 02-13  
 HAMMOND LJ 119982 02-04  
 HANSOTIA P 127876 02-13  
 HANSEN T 120789 02-04  
 HAPPY JM 122238 02-04  
 HARA Y 130913 02-01  
 HARE RD 122371 02-11  
 HARE TA 122081 02-03  
 HARINATH M 121621 02-15, 122405 02-15  
 HARLAN JR 127405 02-15  
 HARLOW HF 119464 02-04  
 HARMATZ JS 120655 02-17  
 HARPER P 127856 02-08  
 HARRIS LS 122242 02-04, 132719 02-03, 132878 02-06, 133290 02-05  
 HARRIS PD 121289 02-03  
 HARRIS RA 119054 02-03  
 HARROW M 126221 02-14  
 HARTLEY R 121357 02-03  
 HARTMANN E 121361 02-04, 124254 02-14  
 HARTMANN EL 119830 02-03, 119832 02-03  
 HARTMANN RJ 119173 02-04  
 HARVEY KM 124225 02-03  
 HARVEY GF 127856 02-08  
 HASEGAWA N 125863 02-17, 125864 02-09  
 HASHIM AA 133216 02-02  
 HASSELAGER E 120791 02-04  
 HASSINEN IE 121546 02-03  
 HAUMONTE M 122306 02-07  
 HAUSER KM 119058 02-04  
 HAWKINS RD 120925 02-13  
 HAYMAN DG 132759 02-03  
 HEFEZ A 122738 02-14  
 HEIBERG A 134312 02-13  
 HEIKKILA R 122229 02-03  
 HEINDEL ND 125359 02-01  
 HEISE GA 131132 02-04, 131284 02-04  
 HELLER B 133622 02-03  
 HENDERSON WG 133071 02-11  
 HENRIKSEN S 119391 02-03  
 HENRIKSSON BG 133547 02-04  
 HENRY BW 131961 02-14  
 HEPLER RS 127418 02-13  
 HERBLIN WF 133767 02-03  
 HERD JA 122179 02-03  
 HERISHANU Y 133294 02-03  
 HERNANDEZ HR 118987 02-09  
 HERRING BS 122178 02-14  
 HESSE G 122296 02-07  
 HIETANEN E 124120 02-03  
 HILL C 132656 02-03  
 HILL HF 119050 02-03  
 HILL RG 125673 02-03  
 HILL SY 127406 02-13  
 HIMMELHOCH JM 125969 02-09  
 HIMWICH HE 120359 02-03  
 HIMWICH WA 118931 02-04, 122989 02-03  
 HINDLE TH 132713 02-11  
 HIRAI H 128952 02-08  
 HIRONAKA T 132679 02-03  
 HISHMAT OH 133216 02-02  
 HO AKS 120230 02-03  
 HO BT 119305 02-03, 120814 02-04, 121318 02-03, 124272 02-03  
 HO KO CC 125359 02-01  
 HOCH B 122082 02-10  
 HOFFMEISTER F 132829 02-04, 133672 02-03  
 HOGARI N 130067 02-11  
 HOGARTY GE 131963 02-08  
 HOLLNECK E 133569 02-03  
 HOLLISTER LE 123886 02-11, 126939 02-17, 126990 02-17, 129830 02-14, 129831 02-14  
 HOLLY BL 122705 02-11  
 HOLTZMAN SG 124333 02-03  
 HONCHAROVA KO 121877 02-03, 121878 02-03  
 HOPKINS HK 120081 02-14  
 HOPKINS JT 133713 02-03  
 HOPKINS K 129838 02-08  
 HORDERN A 122095 02-17  
 HORITA A 119050 02-03  
 HORN AS 120357 02-03  
 HORNKIEWICZ O 119032 02-03  
 HORST WD 121282 02-03  
 HORWITZ D 119394 02-13

# Author Index

HOTOVTSEVA OP 133961 02-03  
 HOJSE KM 122980 02-09  
 HOUSER VP 131449 02-04  
 HOWARD WN 132873 02-01  
 HOWARD JL 120362 02-03  
 HOWELL E 124143 02-14  
 HOWES JF 132878 02-06  
 HOYER I 122446 02-03  
 HRABRICH MB 131284 02-04  
 HSU TH 121301 02-11  
 HSU W 120824 02-08, 132894 02-07  
 HUGHES RN 120219 02-04, 120788 02-04  
 HUSSAIN MH 121285 02-01  
 HUSSAIN AZ 121621 02-15, 122405 02-15  
 HUSZKA L 128347 02-08  
 HUTCHINSON JC 123933 02-10  
 HUTTUNEN MO 123938 02-03  
 HYMOWITZ N 129619 02-04  
 HYNIEK K 126998 02-10  
 HYYPPA MT 122170 02-03

**I**

IDESTROM CM 125029 02-13  
 INOUE S 130912 02-03  
 IRESON JD 132759 02-03, 133305 02-03  
 IRINO K 128952 02-08  
 ISAC M 128463 02-13  
 ISHII H 131056 02-02  
 ISHIKANE M 120632 02-08  
 ITIL T 124152 02-13  
 ITIL TM 120824 02-08, 130472 02-07, 132894 02-07, 132950 02-14, 132953 02-07, 133348 02-13  
 ITO A 119161 02-03  
 ITO K 120632 02-08, 129737 02-09  
 ITURRIGA H 133599 02-11  
 IWAHARA S 120792 02-04, 123939 02-04

**J**

JACKIEWICZ H 133068 02-15  
 JACKSON DM 121315 02-04  
 JACKSON NP 120118 02-08  
 JACOBI P 133347 02-14  
 JACOBSON ES 118898 02-15  
 JACOBSON M 121551 02-03, 122096 02-03  
 JACQUET YF 131447 02-04  
 JAENICKE U 133351 02-08  
 JAKOUBEK B 132695 02-03  
 JANDHYALA BS 122394 02-05  
 JANOWSKY DS 120729 02-15, 121216 02-13, 133123 02-15  
 JANSEN PE 120009 02-04  
 JANSEN PAJ 119024 02-17  
 JANSSON I 122097 02-03  
 JAPUNDZIC I 121647 02-05  
 JAPUNDZIC M 121647 02-05  
 JARBE T 133547 02-04  
 JARLSTEDT J 121283 02-03  
 JARROLD L 119170 02-13, 119171 02-09  
 JASINSKI DR 123040 02-17  
 JEFFERSON JW 122728 02-15  
 JENKINS J 132719 02-03  
 JEWETT RE 124333 02-03  
 JIRAK R 126998 02-10  
 JOFFE JR 129967 02-15  
 JOHNSON DB 120103 02-04  
 JOHNSON FN 121940 02-17, 128338 02-04, 133521 02-04, 133524 02-04  
 JOHNSON GF 120698 02-08  
 JOHNSON IS 132642 02-03  
 JOHNSON JT 130856 02-05  
 JOHNSTON GAR 120809 02-03, 121967 02-03  
 JOHNSTONE M 122883 02-14  
 JONES BE 119392 02-03, 119683 02-03  
 JONES G 133741 02-03  
 JONES GL 133094 02-09  
 JONSSON G 122225 02-03  
 JONSSON J 122443 02-03  
 JORDAN RB 126231 02-15  
 JOUBERT M 133807 02-13  
 JOUVET M 119684 02-03  
 JOVANOVIC UJ 133671 02-13  
 JOVIC R 121355 02-03  
 JUDD LL 120118 02-08, 126228 02-08  
 JUDSON BA 122184 02-04  
 JULIEN RM 123632 02-03, 123633 02-03  
 JURNA I 121281 02-04, 132681 02-03

JURYGA J 133137 02-11

# K

KABES J 125256 02-03  
 KAHR FM 131814 02-13  
 KALANT H 119000 02-03, 120925 02-13  
 KALES A 124143 02-14  
 KAMAT KA 133298 02-04  
 KAMATA O 119052 02-03  
 KAPADDA GJ 121285 02-01  
 KAPLAN J 122663 02-10, 132977 02-08  
 KAPLAN SA 127857 02-14  
 KAPTURKIEWICZ Z 121317 02-04  
 KARCMAR AG 132690 02-03, 133379 02-04  
 KARIYA T 131344 02-09  
 KAROBATH M 119055 02-03  
 KARON BP 128408 02-08  
 KASTIN AJ 121280 02-13  
 KATZ RL 129465 02-10  
 KAUL CL 120234 02-03  
 KAWAKAMI K 125862 02-09  
 KAZAMATSURI H 122704 02-11, 126229 02-14, 129833 02-13  
 KAZI KH 122171 02-11  
 KEDROWA S 133321 02-10  
 KEEHN JD 125531 02-03  
 KEELER BA 130109 02-09  
 KEEN P 122574 02-03  
 KEENAN A 133524 02-04  
 KELLEHERT 122179 02-03  
 KELLNER R 121406 02-10, 132951 02-07  
 KELLOGG C 121278 02-03  
 KELLY MG 133215 02-03  
 KENDEL K 133569 02-03  
 KENNEDY JS 133290 02-05, 133727 02-03  
 KERKUT GA 121074 02-02  
 KETY SS 133098 02-17  
 KHALILI J 120103 02-04  
 KHAN M 133605 02-03  
 KHANNA JM 119000 02-03  
 KHURANA RC 128878 02-15  
 KIEV A 132896 02-08  
 KIKUCHI K 130912 02-03, 133217 02-02  
 KIM JS 133527 02-03  
 KIMBALL AP 119305 02-03  
 KIMBRELL I 123887 02-09  
 KING AR 121303 02-04  
 KING BJ 126231 02-15  
 KING LJ 120267 02-09, 120526 02-03  
 KING MH 121902 02-08  
 KIPLINGER GF 119034 02-14  
 KIRCHNER P 133331 02-15  
 KIRSTEN EB 132676 02-03  
 KISSINGER PT 122237 02-03  
 KITAGAWA S 133670 02-02  
 KLAUWANS HL 122172 02-11, 126230 02-13, 134120 02-15  
 KLEIN DF 122663 02-10, 126232 02-09  
 KLEINROK Z 121275 02-04  
 KLERMAN GL 127220 02-09, 133963 02-09  
 KLETT C 122662 02-08  
 KLETT CJ 120699 02-08  
 KLIMO Z 126994 02-13  
 KLINE NS 128105 02-17  
 KLINGER W 133297 02-01  
 KLUWE S 133352 02-03  
 KNAPP M 133605 02-03  
 KNAPP S 121320 02-03, 133715 02-03  
 KNOX AE 127216 02-09  
 KOBAYASHI K 131344 02-09  
 KOCHERHA VJ 121878 02-03  
 KOE BK 133182 02-03  
 KOH C 131003 02-11  
 KOHLER B 120019 02-04  
 KOIKE S 131056 02-02  
 KOMATSUBARA K 128952 02-08  
 KOMISARIUK BR 133714 02-04  
 KONIG L 133482 02-17  
 KOPEL BS 129830 02-14, 129831 02-14  
 KOPIN IJ 119030 02-03, 122168 02-03, 132369 02-03  
 KORAN LM 125967 02-09  
 KORBEL SF 120018 02-04  
 KOREIN J 131003 02-11  
 KORMAN MG 121976 02-15  
 KORNETSKY C 120085 02-08, 131280 02-04  
 KOSLOW SH 120529 02-01  
 KOSTOWSKI W 120812 02-04

# Psychopharmacology Abstracts

KOTIN J 132989 02-09  
 KOUFEN H 133356 02-13  
 KRANTZ JC 122448 02-03  
 KRAWITT EL 121286 02-05  
 KRIEGLSTEIN J 122091 02-03  
 KRIVITSKAYA GN 133958 02-03  
 KRUGER HJ 133207 02-11  
 KUBENA RK 120831 02-03, 122394 02-05  
 KUCZENSKI RT 133715 02-03  
 KUFFERBERG HJ 120364 02-03  
 KUHAH MJ 124188 02-03  
 KULKARNI AS 120786 02-04, 132896 02-08, 133196 02-04  
 KUNTZMAN R 119048 02-04, 121551 02-03, 122096 02-03  
 KUPFER D 122097 02-03, 125969 02-09  
 KUPIETZ S 121449 02-14  
 KURAN W 132805 02-07  
 KURLAND AA 132895 02-07  
 KUSCHINSKY K 119032 02-03  
 KUSCHKE R 133331 02-15  
 KUSHIMA K 125863 02-17  
 KUTNER SJ 125961 02-14, 125962 02-14  
 KUTSCHERA E 125954 02-14  
 KUZMA R 122193 02-14  
 KUZNETSOVA TS 125265 02-04  
 KWIATKOWSKA E 133076 02-03

# L

LABOY-TORRES JA 133307 02-13  
 LACHENMAYER L 120813 02-03  
 LADINSKY H 120232 02-03  
 LAGE GL 121243 02-03  
 LAL H 122201 02-04  
 LAM K 122230 02-03  
 LAMBERT P 133626 02-11  
 LAMONTAGNE Y 133220 02-07  
 LANDE S 133753 02-04  
 LANGDON DE 127405 02-15  
 LANGS RJ 120479 02-12  
 LANYI G 122738 02-14  
 LAO L 120526 02-03  
 LAQUER KG 130475 02-10  
 LARSEN F 130524 02-03  
 LARSON C 123351 02-09  
 LASAGNA L 126940 02-17  
 LAURANCE BM 123629 02-13  
 LAVINE L 122012 02-03  
 LAVY S 133294 02-03  
 LAW NC 119022 02-06  
 LAWRENCE WH 122445 02-11  
 LAZARE R 121314 02-03  
 LE POIDEVIN D 121335 02-09  
 LEARROY BM 121780 02-15  
 LEATON RN 122391 02-04  
 LEBENSZTEIN W 133068 02-15  
 LEBLANC AE 119000 02-03, 130364 02-04  
 LECANUET JP 132159 02-04  
 LEE FGH 123841 02-01  
 LEE JH 122976 02-09  
 LEE JR 119037 02-03, 132779 02-03  
 LEEMING FC 130856 02-05  
 LEEVY C 121288 02-15  
 LEGGE JS 133719 02-15  
 LEHMANN HE 120263 02-08, 126937 02-17, 130668 02-11, 131571 02-08  
 LEITH NJ 133377 02-04  
 LEMBERGER L 131610 02-14  
 LEMMER B 133527 02-03  
 LENDERS A 120789 02-04  
 LEONARD BE 119057 02-03, 120794 02-04, 121279 02-03, 121305 02-03, 133180 02-04, 133306 02-02  
 LESLIE GB 132759 02-03  
 LESSE H 122706 02-03  
 LETAILLER M 133172 02-11  
 LEVENTHAL T 121986 02-07  
 LEVI-MONTALCINI R 132645 02-03  
 LEVIN W 121551 02-03  
 LEVINE S 122036 02-04  
 LEVITT M 134111 02-09  
 LEVY RA 121964 02-03  
 LEWIS DC 132623 02-17  
 LEWIS DJ 122390 02-04  
 LEWISAS 126197 02-14  
 LIANG M 122177 02-03  
 LIAO CS 122239 02-03  
 LIDBRINK P 132703 02-03

LIEM HH 133733 02-03  
 LINDHOLM H 133516 02-15  
 LINGJAERDE O 134312 02-13  
 LINTON PH 132957 02-17  
 LIPKIN B 122193 02-14  
 LIPSCOMB W 123886 02-11  
 LISSAK K 122450 02-04  
 LJUNGBERG L 133516 02-15  
 LOFSTRANDH S 120832 02-03  
 LOH HH 127693 02-03  
 LONGNECKER DE 121289 02-03  
 LONGO VG 130361 02-03  
 LORENS SA 121882 02-04  
 LORENZO AV 122177 02-03  
 LU AYH 122096 02-03  
 LU L 127184 02-11  
 LUCCIONI H 122315 02-09  
 LUISADA-OPPER A 121288 02-15  
 LUNDBORG P 121278 02-03  
 LUTZ MP 122078 02-04  
 LYON M 123935 02-04

## M

MAAS JW 120992 02-13, 120993 02-13, 130110 02-04  
 MACEK Z 122082 02-10  
 MACLACHLAN RM 121967 02-03  
 MACLAINE GN 123629 02-13  
 MACLEOD SM 132893 02-03  
 MACLEOD VH 121308 02-03  
 MADER R 121596 02-10  
 MAGGIO A 119048 02-04  
 MAGGS R 120995 02-09  
 MAGHERINI PC 132164 02-03  
 MAGNUSSON T 118931 02-04  
 MAHONEY JM 119054 02-03  
 MAHONEY K 122081 02-03  
 MAICKEL RP 122033 02-04  
 MAILLIS MS 121839 02-15  
 MAITRE A 132753 02-11  
 MAJ J 120017 02-04, 121317 02-04  
 MAKOSA M 133462 02-07  
 MAKSYMETS VA 125263 02-03  
 MALEC D 121275 02-04  
 MALONEY GJ 122033 02-04  
 MANDAL BK 122880 02-15  
 MANDELL AJ 121320 02-03, 121370 02-04, 133715 02-03  
 MANGAN GL 119068 02-14  
 MANIAN AA 122535 02-03, 123841 02-01  
 MANNING FJ 122194 02-04  
 MANNING N 119029 02-13  
 MAPFUMO CHINYANGA H 120233 02-03  
 MARASA J 132950 02-14  
 MARCUCCI F 119302 02-03  
 MARGOLIS R 134204 02-08  
 MARLEY E 121297 02-03, 125039 02-17  
 MARMO E 122232 02-03  
 MARQUEZ-JULIO A 122102 02-13  
 MARRIOTT AS 124153 02-04  
 MARS H 133807 02-13  
 MARSHALL MH 120733 02-15  
 MARTIN BR 127216 02-09  
 MARTIN IL 121303 02-04  
 MARTIN WE 121884 02-14  
 MARTIN WR 123040 02-17  
 MARTINI M 133751 02-03  
 MARTORANO JT 127854 02-08  
 MARTZ RMW 119981 02-04  
 MARX M 119034 02-14  
 MASER JD 119982 02-04  
 MASKIN MB 125809 02-14  
 MASLOWSKI J 133450 02-15  
 MASOTTI RE 122019 02-11  
 MASUR J 119981 02-04  
 MATHEWS GJ 121067 02-03  
 MATHEWSON FAL 130474 02-08  
 MATSUMOTO C 119031 02-03  
 MATSUSHIMA T 121265 02-03  
 MATTHE DJ 133354 02-13  
 MATTSOHN RH 132710 02-13  
 MAUGH TH 133082 02-13  
 MAURUSCHAT W 133350 02-15  
 MAXIM PE 125967 02-09  
 MAXION H 133347 02-14  
 MAYSKIY VV 125261 02-03  
 MCANDREW JB 119969 02-15  
 MCCARROLL JE 120018 02-04, 126745 02-14

MCCLANE TK 127216 02-09  
 MCCLOSKEY K 129834 02-14  
 MCCLUER RH 131448 02-04  
 MCCULLOCH JA 132778 02-11  
 MCCULLOCH RM 121967 02-03  
 MCDOWELL AA 134101 02-04  
 MCGANITY WJ 130473 02-17  
 MCISAAC WM 120814 02-04, 121318 02-03, 124272 02-03  
 MCKEAN CM 119056 02-03  
 MCKEARNY JW 127213 02-04  
 MCKINNEY WT 119464 02-04  
 MCCLAUGHLIN FW 119035 02-10  
 MCCLAUGHLIN JL 132873 02-01  
 MCLEAN R 122397 02-14  
 MCLEAN WG 122574 02-03  
 MCMAHON S 129494 02-11  
 MC MILLAN DE 122242 02-04, 128323 02-04  
 MCNAMEE HB 121335 02-09  
 MEDINA A 132988 02-13  
 MEDZIHRADESKY F 121668 02-13  
 MEEKMA P 133128 02-03  
 MEHTA IS 132956 02-07  
 MEIER MJ 121884 02-14  
 MELGES FT 129830 02-14  
 MELLERUP ET 134310 02-15  
 MELTZER H 134111 02-09  
 MENDELS J 132954 02-13  
 MENDLER R 120822 02-09  
 MENDELEWICZ J 134111 02-09  
 MERKEL JR 125359 02-01  
 MERRITT JH 118988 02-03  
 MESHVELISHVILI DF 133674 02-04  
 MESSIHA FS 121301 02-11, 130547 02-09  
 METZ JT 119534 02-03  
 MEYER JH 122193 02-14  
 MICHEL F 119534 02-03  
 MICHELER E 133262 02-11  
 MICZEK KA 132117 02-04  
 MIKODA R 130909 02-04, 130910 02-03  
 MIKODA T 131056 02-02  
 MILLER LL 119034 02-14  
 MILLOY S 125538 02-04  
 MILNE GWA 119022 02-06  
 MILSTERN V 122987 02-09  
 MIMIC-OAK J 121647 02-05  
 MINAMI I 130913 02-01  
 MISIAK H 119246 02-13  
 MITCHELL CL 121882 02-04  
 MITLER MM 122036 02-04  
 MITRA C 133763 02-03  
 MITROFANOV VS 125259 02-05  
 MIYA TS 122247 02-03  
 MIYAKE Y 129737 02-09  
 MIYAMOTO K 129211 02-06  
 MIZUTANI T 128952 02-08  
 MOFFETT A 123637 02-13  
 MOGGEY DE 132869 02-11  
 MOLINENGO L 120014 02-04  
 MOLLOY BB 119058 02-04, 121204 02-03  
 MOORE DF 122987 02-09  
 MOORE P 129509 02-15  
 MOORE RA 120362 02-03  
 MOORE TD 130473 02-17  
 MORDEN B 122036 02-04  
 MORGAN D 120832 02-03  
 MORGENSTERN G 122198 02-11  
 MORI M 119052 02-03  
 MORRIS RJ 119035 02-10  
 MORRISON CF 120787 02-04  
 MORROW AW 122094 02-15  
 MORSE WH 122179 02-03  
 MUELLER PS 131814 02-13  
 MULLER D 122330 02-15  
 MULLER J 122330 02-15  
 MULLER KH 134559 02-10  
 MULLER W 133351 02-08  
 MULLER-EBERHARD U 133733 02-03  
 MULLER-LIAMROTH W 132785 02-14  
 MURDICK PW 119053 02-06  
 MURPHREE OD 132527 02-04  
 MURPHY DL 122980 02-09, 125200 02-09, 127217 02-09, 132989 02-09, 134119 02-15  
 MURPHY J 121621 02-15  
 MURRAY LG 126205 02-09  
 MUSHIN G 121976 02-15  
 MUSSINI E 119302 02-03  
 MUSTY RE 132761 02-04  
 MYERS RD 132682 02-04

MYERS SA 127693 02-03

## N

NADOR K 132802 02-01  
 NAGANUMA R 129088 02-11  
 NAGAOKA A 130912 02-03, 133217 02-02  
 NAGAWA Y 130909 02-04, 130910 02-03, 131056 02-02, 133217 02-02  
 NAKAJIMA M 129737 02-09  
 NAKAJIMA R 130909 02-04, 130910 02-03  
 NAKAJIMA S 122058 02-04  
 NAKAMURA GR 126902 02-12  
 NAKAMURA K 119048 02-04  
 NAKANO J 133301 02-03  
 NANDHASRI PS 121668 02-13  
 NAPPI A 132754 02-09  
 NAQUET R 119835 02-17  
 NARAHASHI T 119162 02-03  
 NAWITO M 133216 02-02  
 NAYLOR GJ 121335 02-09  
 NAYLOR RJ 122573 02-03  
 NAYLORJR 121274 02-03, 122575 02-03  
 NEAL JM 132873 02-01  
 NEALON TF 119039 02-15  
 NEFF CA 133780 02-13  
 NEFF K 134559 02-10  
 NELL T 132681 02-03  
 NEAMTSOV AV 125258 02-03  
 NEWBY NA 123950 02-04  
 NEWMAN LM 120560 02-04, 122078 02-04  
 NEWMAN M 124139 02-15  
 NG LKY 119030 02-03, 132680 02-04  
 NICHOLSON WJ 120939 02-13  
 NICOL H 133804 02-15  
 NICOLL RA 132508 02-03  
 NIELSEN C 127023 02-04  
 NISHI H 127519 02-13  
 NISTICO G 121297 02-03  
 NOBLE R 119169 02-13  
 NOEL JT 126906 02-04  
 NOGUERA R 120994 02-13, 120995 02-09  
 NOONAN JS 119053 02-06  
 NOYES R 129445 02-13  
 NURIMOTO S 128458 02-04  
 NUTT JG 123040 02-17  
 NYBACK H 132683 02-03

## O

O'BRIEN RA 119968 02-11  
 O'NEILL JJ 122535 02-03  
 O'ROURKE T 132719 02-03  
 OESTER YT 133126 02-03  
 OGAWA N 128458 02-04, 129737 02-09  
 OHSIMA M 129088 02-11  
 OISHI H 120792 02-04, 123939 02-04  
 OKAI EA 120233 02-03  
 OKAMOTO Y 120632 02-08  
 OKERHOLM RA 122235 02-03  
 OKSENKRUG GF 125260 02-03  
 OLDS ME 133473 02-04  
 OLLEY JE 121274 02-03, 122573 02-03, 122575 02-03  
 OLSON J 131281 02-04, 133770 02-04  
 ONODERA I 120632 02-08  
 OPITZ K 133131 02-04  
 OPPERMAN JA 120235 02-03  
 ORGURI K 119052 02-03  
 ORME L 122420 02-15  
 ORNELLAS MR 121355 02-03  
 ORRENIUS S 122097 02-03  
 OSAKI M 128952 02-08  
 OSTERHOLM JL 121067 02-03  
 OSUIDE G 120124 02-05  
 OTA KY 132895 02-07  
 OTIS LS 123033 02-03  
 OTSUKA M 132679 02-03  
 OTT B 122352 02-15  
 OVERALL JE 123887 02-09, 126990 02-17, 131961 02-14  
 OVERSTREET DH 121177 02-04  
 OWEN CA 122165 02-03  
 OWEN R 118988 02-03

## P

PADRUTT A 133351 02-08  
 PALESTINE ML 130546 02-11



PALEY HM 134204 02-08  
PALMER HM 118965 02-07  
PALMER KNV 133719 02-15  
PAPAVASILIOU PS 122445 02-11  
PARE CMB 120939 02-13  
PARISH LC 130475 02-10  
PARK S 118986 02-08, 122238 02-04, 133263 02-07  
PARKHOMETS' PK 121877 02-03, 133961 02-03  
PARMAR SS 133745 02-03  
PARS HG 132878 02-06  
PARSONS T 122397 02-14  
PARTINGTON MW 122019 02-11  
PASHCHENKOV SZ 133864 02-11  
PASSANANTI GT 133685 02-13  
PAUL GL 122705 02-11  
PAULSEN RE 122253 02-14  
PAULSON GD 121836 02-03  
PAVLIK A 132695 02-03  
PAYNE RB 122953 02-04  
PAYNE RW 120120 02-08  
PECK RL 120796 02-08  
PECKNOLD JC 120263 02-08, 121397 02-10  
PEEK FW 129868 02-04  
PEEL HW 130184 02-06  
PELAT J 132753 02-11  
PENCE HL 132995 02-15  
PEREDA T 133599 02-11  
PEREZ HC 122987 02-09  
PEREZ-CRUET J 122284 02-03  
PERI G 120232 02-03  
PERNHaupt G 121600 02-10  
PERRETTI A 132752 02-11  
PERSYKO I 122358 02-15  
PERTWEE RG 133741 02-03  
PETERFY G 132715 02-10  
PETERS RD 122953 02-04  
PETERSON NA 119056 02-03  
PETITJEAN F 119684 02-03  
PETRIE JC 133719 02-15  
PFEIFFER AK 133295 02-03  
PFEIFFER RF 133097 02-13  
PHILLIPS J 119984 02-10  
PHOEBUS EC 121986 02-07  
PICCINI NI 133751 02-03  
PICHOT P 122316 02-13  
PILASIEWICZ B 133462 02-07  
PINARD G 133220 02-07, 133221 02-07  
PINKERTON JT 122399 02-03  
PINO ME 133599 02-11  
PINTER EJ 132715 02-10  
PISHKIN V 134850 02-08  
PITTS FN 129383 02-17  
PIVIK T 124143 02-14  
PLACIDI GF 133218 02-11  
PLETSCHER A 122222 02-03  
PLOTNIKOFF N 133128 02-03  
POKORNY AD 123887 02-09  
POLATIN P 127880 02-09  
POLI N 132754 02-09  
POLVAN N 120824 02-08, 132894 02-07  
POMARELLI P 133751 02-03  
POMPEIANO O 132164 02-03  
PONG SF 133716 02-02  
POPOVA EN 133958 02-03  
POSER EG 121397 02-10  
POSKANZER DC 131948 02-11  
POST RM 125200 02-09  
POSTMA JU 130018 02-11  
POTVIN AR 133071 02-11  
POWER T 119612 02-10  
PRABHU VG 133126 02-03, 133181 02-05  
PRADHAN SN 133298 02-04  
PRADO-ALCALA RA 133471 02-04  
PRANCAN AV 133301 02-03  
PRANGE AJ 120994 02-13, 120995 02-09, 122238 02-04, 127216 02-09  
PRENOVEAU Y 133220 02-07  
PRICE PJ 121287 02-03  
PRICHARD JW 132678 02-03  
PRIEN RF 122662 02-08  
PRIOR PF 123629 02-13  
PRUSMACK JJ 123886 02-11  
PRYOR GT 130524 02-03  
PUJOL J 119684 02-03  
PUYEARLR 121836 02-03

Q

QUASTEL JH 121210 02-03  
QUIJADA L 119303 02-03  
QUINLAN D 126221 02-14  
QUITKIN F 122663 02-10, 126232 02-09

R

RACAGNI G 126248 02-01  
RADMAYR E 121597 02-10  
RAEBURN J 121397 02-10  
RAFAELSEN OJ 132189 02-09  
RAFT D 124139 02-15  
RAGHUPATHY E 119056 02-03  
RAHHAL DK 126227 02-08  
RAINSBURY R 133055 02-13  
RAJPUT AH 122171 02-11  
RAMSEY HR 126227 02-08  
RANDRUP A 120791 02-04, 123935 02-04  
RAO GS 121285 02-01  
RAPP W 133261 02-07  
RAPAPORT M 120081 02-14, 129838 02-08  
RASKIN DE 126502 02-15  
RAY I 121477 02-15  
RAY OS 131436 02-04, 133377 02-04  
RAY RS 119053 02-06  
RAZDAN RK 132878 02-06  
RECH RH 121063 02-03, 122391 02-04, 131131 02-03  
RECHTSCHAFFEN A 119534 02-03, 124225 02-03  
RECKLESS JB 131347 02-10  
REDENBAUGH JE 121839 02-15  
REDMOND DE 130110 02-04  
REED D 122440 02-15  
REESE WN 133605 02-03  
REFAESEN OJ 134310 02-15  
REICH P 127215 02-09  
REILLY HT 122148 02-03  
REINHARD J 133603 02-11  
REISS D 134129 02-14  
RENFRO CT 121276 02-04  
RENTON KW 132893 02-03  
REYNOLDS EH 132710 02-13  
RHODES DL 120231 02-03  
RHODES LE 122062 02-03  
RIAZ AG 118987 02-09  
RICCI-GAMALERO S 120014 02-04  
RICHARDSON D 133379 02-04  
RICHARDSON JS 132761 02-04  
RICK JT 121074 02-02  
RICKELS K 119035 02-10, 122426 02-14, 122430 02-07, 132933 02-10, 130475 02-10  
RIFKIN A 122663 02-10, 126232 02-09  
RIKLAN M 119246 02-13, 125809 02-14  
RIMSKAYA VA 125258 02-03  
RINGEL SP 122172 02-11  
RINGROSE CAD 121578 02-15  
RINNE UK 121175 02-15, 133198 02-13  
RISE NL 133126 02-03  
RITTER RM 121984 02-08  
ROACH AK 133605 02-03  
ROBERTS LM 121255 02-17  
ROBINSON S 123884 02-13  
ROBINSON TJ 122881 02-15  
ROBISON GA 133713 02-03  
ROBU AI 125265 02-04  
ROCHLIN D 130669 02-08  
ROCKWELL DA 121581 02-15  
RODI M 124160 02-03  
RODNICK EH 120118 02-08, 126228 02-08  
ROFFMAN M 122201 02-04, 130761 02-03  
ROGER J 123636 02-13  
ROGERS HJ 121402 02-03, 133526 02-03  
ROGERS MP 130109 02-09  
ROLINSKI Z 120791 02-04  
ROOK JK 122953 02-04  
ROSE L 122879 02-15  
ROSEN AJ 121276 02-04  
ROSEN B 134204 02-08  
ROSENBERG L 133265 02-13  
ROSENFELD H 122430 02-07, 130475 02-10  
ROSENKRANTZ H 121284 02-06  
ROSENMAN SJ 127206 02-05  
ROSESTEIN R 133292 02-03  
ROSHIC N 122039 02-04  
ROSS JJ 133718 02-13  
ROSS SB 122182 02-03

ROSS WJ 120526 02-03  
ROSSNER M 133315 02-07  
ROTH RH 120487 02-17, 121522 02-03, 124188 02-03  
ROTH WT 126225 02-13  
ROTHSCHILD CJ 133804 02-15  
ROTHSTEIN E 120977 02-15, 131617 02-15  
ROUSH BW 119058 02-04, 121204 02-03, 133212 02-03  
ROWLEY VN 134104 02-04  
ROZDILSKY B 122171 02-11  
RUBIN LS 127520 02-13  
RUBOVITS R 126230 02-13  
RUBY TA 120811 02-03  
RUDORFER L 134204 02-08  
RUGGIERI S 133517 02-11  
RUNOVA MF 125259 02-05  
RUSSELL RW 121177 02-04  
RUSSO MJ 132761 02-04  
RUTLEDGE CO 130644 02-03  
RYALL RW 132153 02-03  
RYAN CF 120235 02-03

S

SAAVEDRA A 132988 02-13  
SAAVEDRA JM 126244 02-03  
SABLOSKY L 119035 02-10  
SACCHETTI K 133218 02-11  
SACHS C 122225 02-03  
SAFKO S 126994 02-13  
SAHS AL 119028 02-15  
SAINI RK 122232 02-03  
SAINT-FRANCOIS B 122244 02-03  
SAJI Y 131056 02-02  
SAKAI K 120792 02-04  
SAKAI S 133670 02-02  
SAKURAI Y 126709 02-13  
SALETU B 124152 02-13, 132950 02-14, 132953 02-07, 133348 02-13  
SALETU M 124152 02-13, 132953 02-07, 133348 02-13  
SALOMON C 132753 02-11  
SALZMAN C 134129 02-14  
SAMANIN R 121298 02-03, 122243 02-03, 122396 02-03  
SAMARASINGHE J 133141 02-13  
SAMSON HH 122012 02-03  
SAMSONOVA ML 122527 02-04  
SAND P 125802 02-14  
SANDERS-BUSH E 121354 02-03  
SANDLER M 120939 02-13  
SANSONETTI CJ 122148 02-03  
SANTOS-MARTINEZ J 133307 02-13  
SARPEKA N 118964 02-13  
SARTESCHI P 133218 02-11  
SARWER-FONER GJ 121932 02-12  
SASAKI M 128952 02-08  
SASAME HA 122284 02-03  
SATINDER KP 131293 02-04  
SATO H 131056 02-02  
SATO PT 132873 02-01  
SATTES H 133671 02-13  
SAVAGE C 130547 02-09  
SAWADA H 133523 02-01  
SAXENA BM 130668 02-11  
SAYERS AC 121306 02-04  
SCHAFER RJ 121204 02-03  
SCHAFER K 132785 02-14  
SCHALLING D 125029 02-13  
SCHANBERG SM 119161 02-03  
SCHARFETTER C 133351 02-08  
SCHNEIDER MD 133655 02-04  
SCHEEL-KRUGER J 122571 02-03, 133129 02-03  
SCHEIBER P 132802 02-01  
SCHIEFERSTEIN GJ 133303 02-02  
SCHILDKRAUT JJ 124254 02-14, 127215 02-09, 130109 02-09  
SCHLECHTER JM 121316 02-04  
SCHLOSSER W 121282 02-03  
SCHLUE WR 121281 02-04  
SCHMIDT DE 133713 02-03  
SCHMIDT M 121900 02-09  
SCHMIDT MJ 133713 02-03  
SCHNEIDER B 122430 02-07  
SCHNEIDER E 133347 02-14  
SCHNEIDERMAN N 123934 02-04  
SCHOENER EP 132676 02-03

- SCHOENFELD R 122444 02-03  
 SCHOELLER NR 120084 02-08, 120698 02-08  
 SCHREIBER EC 133718 02-13  
 SCHUBERT H 121596 02-10  
 SCHUBERT J 119301 02-03  
 SCHUCKIT MA 120267 02-09  
 SCHULZE B 122340 02-15  
 SCHUMANN HJ 122568 02-03, 131312 02-03  
 SCHWAB RS 131948 02-11  
 SCHWABE U 124170 02-03  
 SCHWIN R 127406 02-13  
 SCLARE AB 132870 02-13  
 SCOTT DF 123629 02-13, 123637 02-13  
 SCOTT GD 122397 02-14  
 SCOTT WH 125199 02-15  
 SCOTTO J 122315 02-09  
 SCUDDER CL 133379 02-04  
 SEDAL L 121976 02-15  
 SEDGWICK PR 122440 02-15  
 SEDYALL G 119301 02-03, 132683 02-03  
 SEGAL DS 121370 02-04, 133715 02-03  
 SEIFERT J 121326 02-03  
 SENAUT B 120790 02-04  
 SENGUPTA P 122880 02-15  
 SERAFINIDES EA 122209 02-08, 126227 02-08  
 SERMATINGER E 121551 02-03, 122096 02-03  
 SERPE SJ 133240 02-15  
 SERRA MT 123033 02-03  
 SETH SK 130163 02-01  
 SEWELL WR 130856 02-05  
 SEYMOUR KA 121303 02-04  
 SHADER RI 118899 02-15, 120655 02-17  
 SHALASH MR 133216 02-02  
 SHALLICE SA 121279 02-03  
 SHAMMA M 133215 02-03  
 SHANE FH 132869 02-11  
 SHANKARAN R 121210 02-03  
 SHAPIRO AK 131960 02-09  
 SHAPIRO E 131960 02-09  
 SHAPIRO T 131003 02-11  
 SHARPE J 122102 02-13  
 SHARPLESS NS 122165 02-03  
 SHAW GG 122077 02-03  
 SHAW WN 119031 02-03  
 SHAYWITZ B 118853 02-03, 120218 02-03  
 SHEARER DE 122062 02-03  
 SHEEHAN DV 131574 02-15  
 SHEEHAN JC 132878 02-06  
 SHEKOSKY JM 133718 02-13  
 SHELDON MI 120358 02-03  
 SHEPHERD M 125038 02-17  
 SHERLOCK D 122397 02-14  
 SHIM CS 118897 02-15, 121218 02-15  
 SHIMOMURA K 119052 02-03  
 SHIOAI H 119033 02-03  
 SHIRAHIGE I 122177 02-03  
 SHOCHI K 130575 02-17  
 SHOPSIN B 120754 02-13, 124330 02-13  
 SHROFF P 121985 02-07  
 SICUTERI F 133749 02-13  
 SIDOROWICZ S 133137 02-11  
 SIGG EB 121282 02-03  
 SIIRTOLA T 121175 02-15, 133198 02-13  
 SILBERMAN A 122230 02-03  
 SILVER DE 119028 02-15  
 SILVERMAN H 119035 02-10, 122430 02-07  
 SILVERMAN J 120081 02-14  
 SILVERSTONE T 133472 02-11  
 SIMMONDS MA 125673 02-03  
 SIMMONS JQ 121403 02-12  
 SIMON P 123937 02-04, 133296 02-02  
 SIMON RP 132684 02-03  
 SIMPSON GM 122976 02-09, 130669 02-08  
 SINCLAIR JG 121179 02-05  
 SINGER S 133471 02-04  
 SINGH MM 128349 02-08  
 SINGH S 122326 02-03  
 SJQVIST F 125029 02-13  
 SJOSTROM R 119985 02-03  
 SKELTON WD 126231 02-15  
 SKINNER GC 123033 02-03, 132370 02-06  
 SLAGEN JL 121380 02-04  
 SLATER P 133304 02-02  
 SMALL IF 122987 02-09, 129382 02-12  
 SMALL JG 122987 02-09, 129382 02-12  
 SMIBERT E 133733 02-03  
 SMITH A 133071 02-11  
 SMITH AA 121277 02-04, 122357 02-03  
 SMITH CB 120358 02-03, 127206 02-05  
 SMITH DE 125278 02-17  
 SMITH DF 130355 02-04  
 SMITH EF 124153 02-03  
 SMITH JA 121357 02-03  
 SMITH JR 119835 02-17  
 SMITH S 132759 02-03  
 SMITH SG 126906 02-04  
 SMYTHIES JR 128457 02-13  
 SNIFFIN CM 127184 02-11  
 SNYDER F 119394 02-13  
 SNYDER SH 120357 02-03, 121072 02-03, 122659 02-13, 129834 02-14, 133110 02-17, 134118 02-15  
 SOMERVILLE AR 122357 02-03  
 SOMMERVILLE AR 120011 02-03  
 SONNINEN V 121175 02-15, 133198 02-13  
 SORDET F 119684 02-03  
 SOULAIRAC A 122313 02-13  
 SOUTHGATE PJ 133299 02-03  
 SOWINSKA H 120017 02-04, 121317 02-04  
 SPAHN GJ 121287 02-03  
 SPARBER SB 132689 02-03  
 SPAULDING TC 122242 02-04  
 SPENCER R 124139 02-15  
 SPENSLEY J 121581 02-15  
 SPIEGEL HE 121282 02-03  
 SPILIMBERGO PG 132772 02-11  
 SPIRA ME 121966 02-03  
 SPOHN HE 120122 02-08  
 SREENIVASAN VR 125748 02-01  
 ST-LAURENT J 132718 02-08  
 STACEY PD 132761 02-04  
 STANCIU E 133011 02-14  
 STANDAERT FG 122181 02-03  
 STARACE CJ 131345 02-10  
 STARKE K 122568 02-03, 133130 02-03, 133132 02-03  
 STEIN L 121174 02-03  
 STEINHAUS H 133518 02-11  
 STEPHENSON JA 120787 02-04  
 STERLIN C 119170 02-13, 119171 02-09  
 STERN S 120754 02-13, 128463 02-13  
 STERN WC 119830 02-03, 119832 02-03, 121361 02-04  
 STEWART WW 121851 02-01  
 STIEHL A 121580 02-13  
 STILLMAN RC 132366 02-15  
 STITZEL RE 120360 02-03  
 STOTSKY BA 123885 02-10, 127184 02-11  
 STOUT MA 118931 02-04  
 STRAUGHAN DW 125673 02-03  
 STRAUSS S 133265 02-13  
 STRETCH R 131446 02-04  
 STRIAN F 133262 02-11  
 STRICKER EM 133750 02-03  
 STROBL D 128875 02-11  
 STUBBERT PA 121286 02-05  
 STUDENT V 126998 02-10  
 SUBOSKI MD 122397 02-14  
 SUHL M 124330 02-13  
 SUK WA 121287 02-03  
 SULSER F 121354 02-03  
 SUOMI SJ 119464 02-04  
 SUSTEN AS 130182 02-03  
 SUTIN J 122204 02-03  
 SUTTER J 122315 02-09  
 SUZUKI J 123841 02-01, 125999 02-09  
 SWARTZBURG M 125969 02-09  
 SWASH M 123637 02-13  
 SWONGER AK 131131 02-03  
 SYKES DH 122198 02-11  
 T  
 TABERIR 133213 02-03  
 TABERNER PV 121074 02-02  
 TAGLIAMONTE A 122284 02-03  
 TAGLIAMONTE P 122284 02-03  
 TAKAGI H 119033 02-03  
 TAKAGI K 122239 02-03  
 TAKAHASHI R 126709 02-13, 131344 02-09  
 TAKAMIZAWA M 131344 02-09  
 TAKAYANAGI I 122239 02-03  
 TAMM U 121281 02-04  
 TANAKA M 129737 02-09  
 TANG M 130382 02-03  
 TANGHE A 121544 02-08, 134309 02-08  
 TARCHALSKA B 120812 02-04  
 TASKA R 131279 02-04  
 TASSET M 124160 02-03  
 TASSINARI CA 123636 02-13  
 TATUM PA 121984 02-08  
 TAYLOR D 119305 02-03, 120814 02-04, 124272 02-03  
 TAYLOR KM 121072 02-03  
 TAYLOR PA 120200 02-15  
 TECCE JJ 120121 02-08  
 TELLER JD 126339 02-15  
 TENNANT FS 122708 02-12  
 TERPSTRA GK 121380 02-04  
 TESAROVA O 133083 02-10  
 TETREAULT L 133220 02-07, 133221 02-07  
 THALER MM 121580 02-13  
 THOA NB 122168 02-03, 132369 02-03, 132680 02-04  
 THODEN U 132164 02-03  
 THOMAS A 131111 02-09  
 THOMPSON DM 133725 02-04  
 THOMPSON GR 121284 02-06  
 THOMPSON RW 127023 02-04  
 THOMSEN HG 134310 02-15  
 THUT PD 121063 02-03  
 TILSON HA 132689 02-03  
 TINKER M 126197 02-14  
 TINKLENBERG JR 129830 02-14, 129831 02-14  
 TISSOT R 133175 02-13  
 TITUS HE 121507 02-04  
 TJOE SA 122535 02-03  
 TOBIAS J 121449 02-14  
 TOBIAS LL 122705 02-11  
 TOLWINSKI T 133462 02-07  
 TOMASZEWSKI K 133137 02-11  
 TONGE SR 120794 02-04, 133180 02-04  
 TORNUST KL 127390 02-09  
 TORU M 131344 02-09  
 TOURTELLOTTE WW 133071 02-11  
 TOVAR-ACOSTA H 132717 02-10  
 TOWEY RM 120200 02-15  
 TREFFERT DA 119969 02-15  
 TRUSTY DM 118931 02-04  
 TSUBOKAWA T 122204 02-03  
 TSYRLIN VA 125262 02-03  
 TUCKER GJ 126221 02-14  
 TUMANOV VP 133958 02-03  
 TUREK I 132895 02-07  
 TURNBULL MJ 133304 02-02  
 TYCE GM 122165 02-03  
 U  
 UCOK A 120824 02-08  
 UDENFRIEND S 132706 02-03  
 UKEI S 119052 02-03, 128458 02-04  
 UGARTE G 133599 02-11  
 ULLMAN KC 120269 02-15  
 UNGERLEIDER JT 127418 02-13  
 URETSKY N 122444 02-03  
 URSILLO RC 132778 02-11  
 USUI Y 130913 02-01  
 UYENO ET 130524 02-03, 131283 02-04  
 V  
 VACHA J 121326 02-03  
 VALZELLI L 121298 02-03, 121299 02-13, 122243 02-03  
 VAMDENBOS GR 128408 02-08  
 VAN ABELEN J 120789 02-04  
 VAN BOXTEL A 130354 02-14  
 VAN DER VELDE CD 126500 02-09  
 VAN DUIN H 123631 02-03  
 VAN ELJK R 130019 02-15  
 VAN FRANK RM 132642 02-03  
 VAN LOMMEL R 133355 02-08  
 VAN MANEN J 130020 02-11  
 VAN PRAAG HM 129401 02-17  
 VAN ROSSUM JM 122395 02-04  
 VAN ZWIETEN PA 122446 02-03  
 VANDERCAR DH 123934 02-04  
 VARTANIAN GA 120233 02-03  
 VAUGHAN T 124257 02-17, 132977 02-08  
 VAVILOV AM 133958 02-03  
 VELASCO M 121280 02-13  
 VENN-WATSON P 132951 02-07  
 VEREECKEN JLT M 121544 02-08, 134309 02-08  
 VERNADAKIS A 133708 02-03  
 VESSELL ES 133685 02-13  
 VETTER P 133351 02-08

## Author Index

VIAU J 133685 02-13  
VILLANI F 119983 02-03  
VILLARREAL JE 120358 02-03  
VISSER SL 123631 02-03  
VITTOURIS N 133173 02-07  
VLADYKA V 122083 02-11  
VOGEL WH 120012 02-03, 122081 02-03  
VOGT M 120524 02-03  
VOLANTE F 133517 02-11  
VOLK W 121599 02-10  
VOLMAT R 133173 02-07  
VON BAHR C 124120 02-03  
VROON PA 130354 02-14

## W

WADDELL WJ 133727 02-03  
WAGNER IG 122430 02-07  
WAGNER J 133132 02-03  
WALKER JE 133071 02-11  
WALKER KE 124272 02-03  
WALLACE JE 118988 02-03, 134043 02-03  
WALLACH MB 122569 02-04  
WALTERS JR 121522 02-03  
WALTZER H 121726 02-12  
WANG RH 123351 02-09  
WARBURTON DM 123936 02-04, 131132 02-04  
WATANABE AM 131610 02-14  
WATKINS JC 121965 02-03  
WATKINSON B 133214 02-03  
WATSON PA 121314 02-03  
WATSON RK 124254 02-14  
WATSON WC 120835 02-13  
WAYNE H 131960 02-09  
WEBSTER CD 122178 02-14  
WEBSTER D 119029 02-13  
WEETMAN DF 133214 02-03  
WEINGARTNER H 132366 02-15  
WEISBURGER EK 121265 02-03  
WEISBURGER JH 121265 02-03

WEISCHER ML 133131 02-04  
WEISE CC 123933 02-10  
WEISE VK 122168 02-03  
WEISENBERG A 128875 02-11  
WEISS B 129423 02-04  
WEISS JL 131610 02-14  
WEISS O 133642 02-11  
WELLER M 121355 02-03  
WENDER PH 129834 02-14  
WENGER GR 120360 02-03  
WENTZ HS 119035 02-10  
WEPSC JG 127340 02-13  
WEST S 122096 02-03  
WETTERBERG L 122706 02-03  
WHALEN EM 130475 02-10  
WHEATLEY D 120996 02-13, 122095 02-17  
WHITE KD 119068 02-14  
WHITE RP 122026 02-04  
WHITTAKER VK 121965 02-03  
WHYBROW PC 120994 02-13, 120995 02-09  
WIERSUM J 132952 02-07  
WILCOX RH 124225 02-03  
WILK S 124330 02-13  
WILL F 133128 02-03  
WILLIAMS MH 118897 02-15, 121218 02-15  
WILLIAMS PD 121976 02-15  
WILPIZESKI CR 132543 02-03  
WILSON AE 133474 02-03  
WILSON CE 122062 02-03  
WILSON IC 127216 02-09  
WINNIK HZ 123884 02-13  
WINSBERG BG 121449 02-14  
WINTER JC 132776 02-04, 133528 02-03, 133655 02-04  
WINTERS WD 133743 02-03  
WISE CD 121174 02-03  
WITA C 133569 02-03  
WITSCHI H 122244 02-03  
WITTER A 133753 02-04  
WITZEL K 132901 02-15

## Psychopharmacology Abstracts

WOLF HH 120811 02-03  
WOLF R 132753 02-11  
WOOD FD 126227 02-08  
WOOD RA 133719 02-15  
WOOTEN GF 132369 02-03  
WRIGHT EM 125674 02-03  
WURSCHE MS 132370 02-06  
WURTMAN RJ 122170 02-03, 128353 02-03  
WYATT RJ 119394 02-13, 124257 02-17, 131610 02-14, 132366 02-15, 132977 02-08

## Y

YAKSH TL 132682 02-04  
YAMADORI A 120853 02-13  
YAMAMOTO H 133670 02-02  
YAMANE H 130068 02-10  
YAMAZAKI S 120792 02-04  
YANG K 123939 02-04  
YEHL AL 123934 02-04  
YEHODA S 128353 02-03  
YLIKAHRI RH 121546 02-03  
YOGI A 123939 02-04  
YOSHIMURA H 119052 02-03  
YODIM MBH 120939 02-13  
YOUNG RR 131948 02-11  
YU C 122230 02-03  
YUWILER A 120231 02-03

## Z

ZANDMAN JC 133172 02-11  
ZARA-KACZIAN E 133295 02-03  
ZARCONI V 124143 02-14  
ZEBROWSKA-LUPINA I 133296 02-02  
ZIGMOND NJ 133750 02-03  
ZIMMERBERG B 133726 02-04  
ZIMMERMANN H 133569 02-03  
ZITKO BA 132878 02-06  
ZULAU S 133351 02-08  
ZWILLING G 123934 02-04



# SUBJECT INDEX

[The Subject Index is machine generated. Keywords in the titles of abstracts appear alphabetically in the left hand margin; under each keyword is a list of titles in which the keyword appears. The spelling of words in the titles of abstracts has not been changed; hence, two spellings of the same word may appear in this index—for example, BEHAVIOR and BEHAVIOUR.]

- AAA**  
EXPERIMENTAL PSYCHOClinical TREATMENT OF THE SEVERELY MENTALLY RETARDED WITH ARGININE-N-ACETYL-ASPARTATE (AAA). 132772 02-11
- ABERRANT**  
ABERRANT RESPONSE TO DIAZEPAM: A NEW SYNDROME. 129967 02-15
- ABILITIES**  
INHIBITORY EFFECTS OF CHRONIC ADMINISTRATION OF MORPHINE ON URIDINE AND THYMIDINE INCORPORATING ABILITIES OF MOUSE LIVER AND BRAIN SUBCELLULAR FRACTIONS. 122245 02-03
- ABLATIONS**  
EFFECTS OF PSYCHOTROPIC DRUGS ON EMOTIONAL BEHAVIOR IN RATS WITH LIMBIC LESIONS, WITH SPECIAL REFERENCE TO OLFACTORY BULB ABLATIONS. 128458 02-04
- ABORTION**  
ATTEMPTED ABORTION BY THE USE OF BISHYDROXYCOUMARIN. 121478 02-15
- ABSOLUTE**  
ANTICONSULSANTS AND PSYCHOTHERAPEUTIC AGENTS OF KNOWN ABSOLUTE CONFIGURATION. (PH.D. DISSERTATION). 130163 02-01
- ABSTINENCE**  
INFLUENCE OF ALCOHOL INTAKE, LENGTH OF ABSTINENCE AND MEPROBAMATE ON THE RATE OF ETHANOL METABOLISM IN MAN. 133599 02-11
- ABUSE**  
PSYCHOSIS DURING METHYLPHENIDATE ABUSE. 121581 02-15  
ACUTE PSYCHOSIS INDUCED BY PSYCHOTOMIMETIC DRUG ABUSE: CLINICAL FINDINGS. 126219 02-12  
ACUTE PSYCHOSIS INDUCED BY PSYCHOTOMIMETIC DRUG ABUSE: NEUROCHEMICAL FINDINGS. 126220 02-13
- ACCELERATES**  
NARCOTIC ANTAGONISTS: THE SEARCH ACCELERATES. 133082 02-13
- ACCIDENTAL**  
SUICIDAL AND ACCIDENTAL DIGOXIN INGESTION. 121817 02-15
- ACCUMULATION**  
ACCUMULATION AND ELIMINATION OF A NOVEL METABOLITE DURING CHRONIC ADMINISTRATION OF THE PHENOTHIAZINE DRUG PERAZINE TO RATS. 121198 02-03  
STUDIES ON THE ACCUMULATION OF O-METHYLATED DOPAMINE AND NORADRENALINE IN THE RAT BRAIN FOLLOWING VARIOUS NEUROLEPTICS, THYMOLPTICS AND ACEPERONE. 133129 02-03
- ACCUMULATIONS**  
THE EFFECTS OF ELECTROSHOCK THERAPY, LITHIUM AND TRICYCLIC ANTIDEPRESSANT TREATMENT ON PROBENECID INDUCED ACCUMULATIONS OF CSF AMINE METABOLITES IN DEPRESSED PATIENTS. (UNPUBLISHED PAPER). 125200 02-09
- ACEPERONE**  
STUDIES ON THE ACCUMULATION OF O-METHYLATED DOPAMINE AND NORADRENALINE IN THE RAT BRAIN FOLLOWING VARIOUS NEUROLEPTICS, THYMOLPTICS AND ACEPERONE. 133129 02-03
- ACETALDEHYDE**  
ETHANOL PREFERENCE IN THE RAT: INTERACTIONS BETWEEN BRAIN SEROTONIN AND ETHANOL, ACETALDEHYDE, PARALDEHYDE, 5-HTP AND 5-HTOL. 132682 02-04  
EFFECTS OF ADRENERGIC BLOCKADE ON CARDIOVASCULAR RESPONSES TO ETHANOL AND ACETALDEHYDE. 133301 02-03
- ACETOXYCYCLOHEXIMIDE**  
EFFECTS OF ACETOXYCYCLOHEXIMIDE ON APPETITIVE LEARNING AND MEMORY. 119442 02-04
- ACETYLCHOLINE**  
EFFECT OF CENTRAL STIMULANTS AND DEPRESSANTS ON MOUSE BRAIN ACETYLCHOLINE AND CHOLINE LEVELS. 120232 02-03  
EFFECT OF INTRACEREBRAL INJECTIONS OF CARBAMYLCHOLINE AND ACETYLCHOLINE ON TEMPERATURE REGULATION IN THE CAT. 120811 02-03
- STUDIES ON THE PARADOXICAL INTERACTION OF PHYSOSTIGMINE AND PENTOBARBITAL ON REGIONAL BRAIN ACETYLCHOLINE CONTENT OF VARIOUS ANIMAL SPECIES. 121296 02-03
- ACETYLCHOLINE LEVEL IN BRAIN STRUCTURES OF RATS FOLLOWING ADMINISTRATION OF LYSERGIC ACID DIETHYLAMIDE. 125256 02-03
- THE MICROELECTROPHORETIC ADMINISTRATION OF NORADRENALINE, 5-HYDROXYTRYPTAMINE, ACETYLCHOLINE AND GLYCINE TO SACRAL PARASYMPATHETIC PREGANGLIONIC NEURONS. 132153 02-03
- CENTRAL AND PERIPHERAL ACTIONS OF THE ACETYLCHOLINE ANTAGONIST, AMBUTONIUM BROMIDE. 133299 02-03
- PSYCHOTROPIC DRUG INFLUENCES ON BRAIN ACETYLCHOLINE UTILIZATION. 133474 02-03
- ACETYLCHOLINESTERASE**  
EFFECTS OF AMPHETAMINE AND PILOCARPINE ON EATING BEHAVIOR IN RATS WITH CHRONICALLY LOW ACETYLCHOLINESTERASE LEVELS. 121177 02-04
- ACID**  
EFFECTS OF PHENOTHIAZINES ON AMINO ACID TRANSPORT AND PROTEIN SYNTHESIS IN ISOLATED NERVE ENDINGS. 119056 02-03  
STEADY-STATE LEVELS OF PROBENECID AND THEIR RELATION TO ACID MONOAMINE METABOLITES IN HUMAN CEREBROSPINAL FLUID. 119985 02-03  
THE EFFECTS OF CHRONIC IMIPRAMINE ADMINISTRATION ON RAT BRAIN LEVELS OF SEROTONIN, 5-HYDROXYINDOLEACETIC ACID, NOREPINEPHRINE AND DOPAMINE. 120359 02-03  
THE ACTION OF GAMMA-HYDROXYBUTYRIC ACID ON CEREBRAL GLUCOSE METABOLISM. 121074 02-02  
PHENOBARBITAL MEDIATED INCREASE IN RING AND N-HYDROXYLATION OF THE CARCINOGEN N-2-FLUORENYLACETAMIDE, AND DECREASE IN AMOUNTS BOUND TO LIVER DEOXYRIBONUCLEIC ACID. 121265 02-03  
PEYOTE AND RELATED ALKALOIDS XIV: MESCALOXYLIC ACID AND MESCALORUVIC ACID, THE NOVEL AMINO ACID ANALOGS OF MESCALINE. 121285 02-01  
REVERSAL LEARNING FACILITATED BY A SINGLE INJECTION OF LYSERGIC ACID DIETHYLAMIDE (LSD-25) IN THE RAT. 121303 02-04  
EFFECT OF AMINAZINE AND IMISINE ON METABOLISM OF DICARBOXYLIC AMINO ACIDS AND THEIR DERIVATIVES (GLUTAMINE AND GAMMA-AMINOBUTYRIC ACID) IN CAT BRAIN. 121876 02-03  
SOME CLINICAL AND SOCIAL ASPECTS OF LYSERGIC ACID DIETHYLAMIDE: PART I. 121932 02-12  
THE INFLUENCE OF SEMICARBAZIDE INDUCED DEPLETION OF GAMMA-AMINOBUTYRIC ACID ON PRESYNAPTIC INHIBITION. 121963 02-03  
SUPPRESSION OF LYSERGIC ACID DIETHYLAMIDE (LSD) EFFECTS IN PREGNANT RATS. 124174 02-03  
ACETYLCHOLINE LEVEL IN BRAIN STRUCTURES OF RATS FOLLOWING ADMINISTRATION OF LYSERGIC ACID DIETHYLAMIDE. 125256 02-03  
ACTIVE TRANSPORT OF LYSERGIC ACID DIETHYLAMIDE. 125674 02-03  
THE DEVELOPMENT OF FIXED-RATIO PERFORMANCE UNDER THE INFLUENCE OF RIBONUCLEIC ACID. 129423 02-04  
NICOTINIC ACID, THIORIDAZINE, FLUOXYMESTERONE AND THEIR COMBINATIONS IN HOSPITALIZED GERIATRIC PATIENTS: A SYSTEMATIC CLINICAL STUDY. 130668 02-11  
RELATIONSHIPS BETWEEN SERUM AND CEREBROSPINAL FLUID ANTICONSULSANT DRUG AND FOLIC ACID CONCENTRATIONS IN EPILEPTIC PATIENTS. 132710 02-13  
THE EFFECT OF DIPHENYHYDANTOIN ON THE CLINICAL MANIFESTATIONS AND EXCRETION OF 5-HYDROXYINDOLEACETIC ACID IN PARKINSONS DISEASE. 132808 02-11  
EXCRETION OF VANILLYL-MANDELIC ACID, HOMOVANILLIC ACID, N-METHYL-NICOTINAMIDE, AND N-METHYL-2-PYRIDONE-5-CARBOXAMIDE

## Subject Index

## Psychopharmacology Abstracts

- IN URINE OF VOLUNTARY TEST PERSONS AND PSYCHIATRIC PATIENTS BEFORE AND AFTER ADMINISTRATION OF METHIONINE. 133265 02-13
- EXCITATORY RESPONSES FOLLOWING INTRACAUDATE INJECTION OF N-METHYL-DL-ASPARTIC ACID. 133302 02-02
- SUBSTITUTED 3,4,5 TRIMETHOXYBENZAMIDES: CORRELATION BETWEEN INHIBITION OF PYRUVIC ACID OXIDATION AND ANTICONVULSANT ACTIVITY. 133745 02-03
- INTERACTION OF THE EFFECT OF LYSERGIC ACID DIETHYLAMIDE AND AMINAZINE AT THE LEVEL OF INDIVIDUAL NEURONS OF THE MIDBRAIN RETICULAR FORMATION. 134457 02-03
- ACIDS**
- THE EFFECTS OF SOME TRYPTAMINE DERIVATIVES ON BRAIN MONOAMINES AND THEIR PRECURSOR AMINO ACIDS. 121279 02-03
- EFFECTS OF PERIPHERAL AROMATIC L-AMINO ACIDS DECARBOXYLASE INHIBITOR ON L-(2-14C)-3,4 DIHYDROXYPHENYLALANINE METABOLISM IN MAN. 121301 02-11
- EFFECT OF AMINAZINE AND IMISINE ON METABOLISM OF DICARBOXYLIC AMINO ACIDS AND THEIR DERIVATIVES (GLUTAMINE AND GAMMA-AMINOBUTYRIC ACID) IN CAT BRAIN. 121876 02-03
- THE EFFECT OF THE NEURONAL EXCITANT N-METHYL-D-ASPARTATE ON THE METABOLISM OF MOUSE BRAIN AMINO ACIDS LABELLED FROM (14C)BICARBONATE AND L-(U-14C)ASPARTATE. 121965 02-03
- BRAIN AMINO ACIDS AS AFFECTED BY ACUTE AND CHRONIC ADMINISTRATION OF CHLORPROMAZINE. 122989 02-03
- ACQUISITION**
- THE CONCURRENT EFFECTS OF SCOPOLAMINE ON SPONTANEOUS MOTOR ACTIVITY AND THE ACQUISITION OF AN ACTIVE AVOIDANCE RESPONSE. 121276 02-04
- ACQUISITION AND PERFORMANCE EFFECTS OF SCOPOLAMINE AND OF TREATMENT WITHDRAWAL IN AVOIDANCE SITUATIONS. 122039 02-04
- EFFECTS OF LITHIUM CHLORIDE ON LEARNED RESPONSES: ACQUISITION, RETENTION, AND EXPRESSION. 128338 02-04
- AVOIDANCE ACQUISITION AND CNS STIMULANTS. 133196 02-04
- ACTH**
- EFFECT OF ACTH ON THE SYNTHESIS OF RAPIDLY LABELLED RNA IN THE NERVOUS SYSTEM OF MICE. 132695 02-03
- ACTING**
- THE INFLUENCE OF SOME CENTRALLY ACTING DRUGS ON SYMPATHETIC NERVE ACTIVITY. 121308 02-03
- INTERACTIONS OF GUANETHIDINE AND INDIRECT ACTING SYMPATHOMIMETIC AMINES. 133130 02-03
- ALTERATIONS BY CENTRALLY ACTING DRUGS OF THE SUPPRESSION OF SELF-STIMULATION BEHAVIOR IN THE RAT BY TETRABENAZINE, PHYSOSTIGMINE, CHLORPROMAZINE AND PENTOBARBITAL. 133473 02-04
- ACTINOMYCIN**
- PROACTIVE EFFECT OF ACTINOMYCIN D ON MAZE PERFORMANCE IN THE RAT. 122058 02-04
- ACTINOMYCIN-D**
- RELATION BETWEEN DRUG METABOLIZING ACTIVITY AND PHOSPHOLIPIDS IN HEPATIC MICROSOMES. I. EFFECTS OF PHENOBARBITAL, CARBON TETRACHLORIDE, AND ACTINOMYCIN-D. 119001 02-03
- ACTION**
- ANTI-OBESITY ACTION OF FENFLURAMINE. 118964 02-13
- L-DOPA IN PARKINSONISM: A POSSIBLE MECHANISM OF ACTION. 119030 02-03
- THE ACTION OF IMIPRAMINE, AMITRIPTYLINE, DOXEPIN AND BUTRIPTYLINE IN AN OPERANT CONDITIONING SCHEDULE. 120014 02-04
- A STRATEGY FOR THE STUDY OF BEHAVIORAL MECHANISMS OF ANTIPSYCHOTIC DRUG ACTION IN SCHIZOPHRENIA. 120122 02-08
- BEHAVIORAL AND BIOCHEMICAL EFFECTS OF PREFERENTIALLY PROTECTING MONOAMINES IN THE BRAIN AGAINST THE ACTION OF RESERPINE. 120231 02-03
- THE ACTION OF GAMMA-HYDROXYBUTYRIC ACID ON CEREBRAL GLUCOSE METABOLISM. 121074 02-02
- TRANSFORMATION OF FISCHER RAT EMBRYO CELLS BY THE COMBINED ACTION OF MURINE LEUKEMIA VIRUS AND (-) TRANS-DELTA-9-TETRAHYDROCANNABINOL. 121287 02-03
- CONVULSIVE ACTION OF PENICILLIN. 121967 02-03
- THYROID ACTION ON BEHAVIORAL PHYSIOLOGICAL EFFECTS AND DISPOSITION OF PHENOTHIAZINES. 122238 02-04
- EFFECT OF COLD EXPOSURE ON DRUG ACTION AND HEPATIC DRUG METABOLISM IN THE RAT. 122247 02-03
- THE CENTRAL HYPOTENSIVE ACTION OF AMPHETAMINE, EPHEDRINE, PHENTERAMINE, CHLORPHENTERAMINE AND FENFLURAMINE. 122446 02-03
- THE ACTION OF SOME ANTICONVULSANT DRUGS ON COBALT INDUCED EPILEPSY AND ON THE BEMEGRIDE THRESHOLD IN ALERT CATS. 123631 02-03
- STRUCTURE-ACTIVITY RELATIONSHIP OF 5-TRIAZOLOBENZODIAZEPINES IN CENTRAL NERVOUS DEPRESSANT ACTION. 130910 02-03
- LOW DOSAGE PHENOTHIAZINE THERAPY: EFFECTIVE ANXIOLYTIC ACTION WITHOUT IMPAIRMENT TO INTELLECTUAL FUNCTION. 132715 02-10
- THE EFFECT OF EXPERIMENTAL LOCAL INFLAMMATION ON THE ACTION OF BARBITURATES IN RAT. 133126 02-03
- ACTION AND INTERACTION OF CHOLINERGIC AGONISTS AND ANTAGONISTS ON SELF-STIMULATION. 133298 02-04
- THE ACTION OF NEUROLEPTIC DRUGS ON THE MOTOR SYSTEM IN MAN. 133354 02-13
- CLINICAL STUDY OF THE ACTION OF THIORIDAZINE RETARD POLFA. 133462 02-07
- A NEUROLOGICAL ANALYSIS OF THE ACTION OF TRANQUILLIZER DERIVATIVES OF BENZODIAZEPINE. 133506 02-13
- THE NEUROLEPTIC ACTION OF OXAFUMAZINE, PARTICULARLY IN ACUTE PSYCHOSES. 133626 02-11
- OBJECTIVE STUDY OF THE ACTION OF A SOPORIFIC. 133671 02-13
- EXPERIMENTAL STUDIES ON THE MECHANISM OF RESERPINE ACTION. 133959 02-03
- ACTIONS**
- CENTRAL ACTIONS OF 6-HYDROXYDOPAMINE AND OTHER PHENYLETHYLAMINE DERIVATIVES ON BODY TEMPERATURE IN THE RAT. 120362 02-03
- SOME ACTIONS OF PENTAZOCINE ON BEHAVIOR AND BRAIN MONOAMINES IN THE RAT. 124333 02-03
- PHARMACOLOGICAL STUDY OF HYDROGENATED RUGULOVASINE A AND B HYDROCHLORIDES: CENTRAL AND PERIPHERAL ACTIONS. 130912 02-03
- THE EFFECTS OF SOME BETA ADRENERGIC BLOCKING AGENTS ON THE CENTRAL AND PERIPHERAL ACTIONS OF TREMORINE AND OXOTREMORINE. 132759 02-03
- STRUCTURAL ANALYSIS OF TROPINES: STRUCTURE OF BENZOYL TROPINE AND BENZOYL-PSI-TROPINE (TROPACOCAINE) AND THEIR CHOLINOLYTIC ACTIONS. 132802 02-01
- CENTRAL AND PERIPHERAL ACTIONS OF THE ACETYLCHOLINE ANTAGONIST, AMBUTONIUM BROMIDE. 133299 02-03
- ACTIVATED**
- COMPARATIVE STUDY ON THE INHIBITION OF NA<sup>+</sup>, K<sup>+</sup> ACTIVATED ATPASE ACTIVITY BY CHLORPROMAZINE, PROMAZINE, IMIPRAMINE, AND THEIR MONODESMETHYL METABOLITES. 122091 02-03
- ACTIVATION**
- ELECTROENCEPHALOGRAPHIC ACTIVATION WITH SLEEP AND METHOHEXITAL: COMPARATIVE USEFULNESS IN THE DIAGNOSIS OF EPILEPSY. 122253 02-14
- ACTIVATION OF BRAIN SUCCINATE DEHYDROGENASE BY LITHIUM. 123663 02-03
- ACTIVATION AND INHIBITION OF LIPOLYSIS IN ISOLATED FAT CELLS BY VARIOUS INHIBITORS OF CYCLIC-AMP PHOSPHODIESTERASE. 124170 02-03
- ACTIVE**
- ACTIVE AVOIDANCE CONDITIONING: EFFECTS OF D-DEPRIVATION (DESYNCHRONIZED SLEEP DEPRIVATION) AND OF ALTERED BRAIN CATECHOLAMINES. 119832 02-03

- THE CONCURRENT EFFECTS OF SCOPOLAMINE ON SPONTANEOUS MOTOR ACTIVITY AND THE ACQUISITION OF AN ACTIVE AVOIDANCE RESPONSE. 121276 02-04
- MAINTENANCE PSYCHOTROPIC DRUGS IN THE PRESENCE OF ACTIVE TREATMENT PROGRAMS: A TRIPLE-BLIND WITHDRAWAL STUDY WITH LONG-TERM MENTAL PATIENTS. 122705 02-11
- HABITUATION TO LIGHT AND SPONTANEOUS ACTIVITY IN THE ISOLATED SIPHON OF APLYSIA: THE EFFECTS OF SYNAPTICALLY ACTIVE PHARMACOLOGICAL AGENTS. (PH.D.DISSERTATION). 123950 02-04
- ACTIVE TRANSPORT OF LYSERGIC ACID DIETHYLAMIDE. 125674 02-03
- DRUG-INDUCED FACILITATION OF ACTIVE AVOIDANCE: A BEHAVIORAL EXPLANATION. 131436 02-04
- ACTIVITIES**
- STEREOTYPIC AND ANTICATALEPTIC ACTIVITIES OF AMPHETAMINE AFTER INTRACEREBRAL INJECTIONS. 122573 02-03
- THE EFFECTS OF ENVIRONMENTAL ISOLATION ON BEHAVIOR AND REGIONAL RAT BRAIN TYROSINE HYDROXYLASE AND TRYPTOPHAN HYDROXYLASE ACTIVITIES. 133715 02-03
- ACTIVITY**
- RELATION BETWEEN DRUG METABOLIZING ACTIVITY AND PHOSPHOLIPIDS IN HEPATIC MICROSOMES. I. EFFECTS OF PHENOBARBITAL, CARBON TETRACHLORIDE, AND ACTINOMYCIN-D. 119001 02-03
- EFFECT OF MORPHINE ON TYROSINE HYDROXYLASE ACTIVITY IN MOUSE BRAIN. 119033 02-03
- COMPARISON OF THE DOSE-RESPONSE EFFECTS OF MORPHINE ON BRAIN AMINES, ANALGESIA AND ACTIVITY IN MICE. 119037 02-03
- ANOREXIGENIC ACTIVITY OF INTERMITTENT DEXTROAMPHETAMINE WITH AND WITHOUT MEPROBAMATE. 119169 02-13
- BRAIN CONCENTRATIONS OF LORAZEPAM AND OXAZEPAM AT EQUAL DEGREE OF ANTICONVULSANT ACTIVITY. 119302 02-03
- RELATIONSHIP BETWEEN EXTRAOCULAR AND PGO ACTIVITY IN THE CAT. 119534 02-03
- SPINDLE-LIKE ACTIVITY IN THE CAT. 119835 02-17
- THE EFFECT OF AMANTADINE ON MOTOR ACTIVITY AND CATALEPSY IN RATS. 120017 02-04
- EFFECTS OF GAMMA-HYDROXYBUTYRATE ON CHICK BEHAVIOUR, ELECTROCORTICAL ACTIVITY AND CROSSED EXTENSOR REFLEXES. 120124 02-05
- DRUG-INDUCED ALTERATIONS IN THE ACTIVITY OF RAT BRAIN CHOLINERGIC ENZYMES: I. IN VITRO AND IN VIVO EFFECT OF AMPHETAMINE. 120230 02-03
- EFFECTS OF CHLORDIAZEPOXIDE UPON SPONTANEOUS ALTERNATION AND THE HIPPOCAMPAL ELECTRICAL ACTIVITY IN WHITE RATS. 120792 02-04
- THE EFFECTS OF SOME DRUGS AFFECTING BRAIN 5-HT ON THE AGGRESSIVE BEHAVIOR AND SPONTANEOUS ELECTRICAL ACTIVITY OF THE CENTRAL NERVOUS SYSTEM OF THE ANT, FORMICA-RUFA. 120812 02-04
- EDEMA AND INCREASED PLASMA RENIN ACTIVITY IN LITHIUM TREATED PATIENTS. 120822 02-09
- BENZODIAZEPINES: ANXIETY REDUCING ACTIVITY BY REDUCTION OF SEROTONIN TURNOVER IN THE BRAIN. 121174 02-03
- ON THE INVOLVEMENT OF THE CAUDATE-PUTAMEN, GLOBUS-PALLIDUS AND SUBSTANTIA-NIGRA WITH NEUROLEPTIC AND CHOLINERGIC MODIFICATION OF LOCOMOTOR ACTIVITY. 121274 02-03
- THE CONCURRENT EFFECTS OF SCOPOLAMINE ON SPONTANEOUS MOTOR ACTIVITY AND THE ACQUISITION OF AN ACTIVE AVOIDANCE RESPONSE. 121276 02-04
- MICROSOMAL PENTOBARBITAL HYDROXYLASE ACTIVITY IN ACUTE VIRAL HEPATITIS. 121288 02-15
- SEROTONINERGIC NEUROTRANSMISSION AND MORPHINE ACTIVITY. 121298 02-03
- THE INFLUENCE OF SOME CENTRALLY ACTING DRUGS ON SYMPATHETIC NERVE ACTIVITY. 121308 02-03
- THE EFFECT OF BETA-PHENETHYLAMINE UPON SPONTANEOUS MOTOR ACTIVITY IN MICE: A DUAL EFFECT ON LOCOMOTOR ACTIVITY. 121315 02-04
- THE EFFECT OF L-DOPA AND (±) AMPHETAMINE ON THE LOCOMOTOR ACTIVITY AFTER PIMOZIDE AND PHENOXYBENZAMINE. 121317 02-04
- DECREASE OF RIBONUCLEASE ACTIVITY OF ISOLATED RAT LIVER CYTOPLASMIC RIBOSOMES AFTER THE PHENOBARBITAL ADMINISTRATION. 121326 02-03
- EFFECT OF INTRAVENTRICULAR INFUSION OF DOPAMINE AND NOREPINEPHRINE ON MOTOR ACTIVITY. 121370 02-04
- INCREASED HEPATIC PHOSPHOPROTEIN PHOSPHATASE ACTIVITY INDUCED BY PHENOBARBITAL AND ITS SUPPRESSION BY CYCLOHEXIMIDE AND SKF-525-A. 121647 02-05
- PENICILLIN INDUCED SEIZURE ACTIVITY IN THE HATCHET FISH. 121966 02-03
- EFFECTS OF PICROTOXIN AND STRYCHNINE UPON ELECTRICAL ACTIVITY OF THE PROXIMAL RETINA. 121968 02-03
- COMPARATIVE STUDY ON THE INHIBITION OF NA<sup>+</sup>, K<sup>+</sup> ACTIVATED ATPASE ACTIVITY BY CHLORPROMAZINE, PROMAZINE, IMPRAMINE, AND THEIR MONODESMETHYL METABOLITES. 122091 02-03
- DOSE-RESPONSES AND RELATIONSHIPS BETWEEN ANTICHOLINERGIC ACTIVITY AND MOOD WITH TRICYCLIC ANTIDEPRESSANTS. 122193 02-14
- ANALGESIC ACTIVITY OF DELTA9-TETRAHYDROCANNABINOL IN THE RAT AND MOUSE. 122200 02-04
- PALLIDAL AND TEGMENTAL INHIBITION OF OSCILLATORY SLOW WAVES AND UNIT ACTIVITY IN THE SUBTHALAMIC NUCLEUS. 122204 02-03
- ALLEVIATION OF BARBITURATE INHIBITION ON THE OXIDATIVE ACTIVITY OF SUBMITOCHONDRIAL PARTICLES BY ALKALI. 122230 02-03
- THE EFFECTS OF SELECTIVE LESIONING OF BRAIN SEROTONIN OR CATECHOLAMINE CONTAINING NEURONES ON THE ANORECTIC ACTIVITY OF FENFLURAMINE AND AMPHETAMINE. 122243 02-03
- ENHANCED ACTIVITY OF BENZOPYRENE HYDROXYLASE IN RAT LIVER AND LUNG AFTER ACUTE CANNABIS ADMINISTRATION. 122244 02-03
- LOCOMOTOR ACTIVITY INCREASES PRODUCED BY INTRAHIPPOCAMPAL AND INTRASEPTAL ATROPINE IN RATS. 122391 02-04
- LEARNED BEHAVIOR AND LIMBIC SYSTEM ACTIVITY IN EXPERIMENTAL PORPHYRIA. 122706 02-03
- DEPRESSION OF SPONTANEOUS ACTIVITY IN GOLDFISH BY MAGNESIUM PEMOLINE. 122957 02-04
- EFFECTS OF DIPHENYLHYDANTOIN AND OTHER ANTIEPILEPTIC DRUGS ON EPILEPTIFORM ACTIVITY AND PURKINJE CELL DISCHARGE RATES. 123632 02-03
- HABITUATION TO LIGHT AND SPONTANEOUS ACTIVITY IN THE ISOLATED SIPHON OF APLYSIA: THE EFFECTS OF SYNAPTICALLY ACTIVE PHARMACOLOGICAL AGENTS. (PH.D.DISSERTATION). 123950 02-04
- THE EEG AND BEHAVIORAL CONTINUUM OF THE CROCODILIAN CAIMAN-SCLEROPS. 2 EEG AND EMG SPIKE ACTIVITY. 124225 02-03
- EFFECT OF THE IMPRAMINE GROUP OF ANTIDEPRESSANTS ON THE SEROTONIN LEVEL AND ACTIVITY OF 5-OXYTRYPTOPHANDECARBOXYLASE IN THE BRAIN OF ALBINO RATS. 125260 02-03
- EFFECT OF NEUROTROPIC AGENTS ON CHANGES IN BIOELECTRIC ACTIVITY OF THE RENAL NERVE, EVOKED BY STIMULATION OF THE DESCENDING COLUMNS OF THE SPINAL CORD. 125262 02-03
- ANTIBACTERIAL ACTIVITY OF O-AMINO-N-HYDROXYBENZENESULFONAMIDES. 125359 02-01
- SEROTONERGIC AND CHOLINERGIC INVOLVEMENT IN HABITUATION OF ACTIVITY AND SPONTANEOUS ALTERNATION OF RATS IN A Y-MAZE. 131131 02-03
- EFFECTS OF INTERTRIAL CROSSING PUNISHMENT AND D-AMPHETAMINE SULFATE ON AVOIDANCE AND ACTIVITY IN FOUR SELECTIVELY BRED RAT STRAINS. 131293 02-04
- RHYTHMIC ACTIVITY OF THE VESTIBULO-OCULOMOTOR SYSTEM INDUCED BY A CHOLINERGIC DRUG. 132164 02-03
- BRAIN STEM SEROTONIN DEPLETION AND PONTO-GENICULO-OCCIPITAL WAVE ACTIVITY IN THE CAT TREATED WITH RESERPINE. 132684 02-03
- AN ANALYSIS OF THE EFFECT OF RESERPINE UPON PONTO-GENICULO-OCCIPITAL WAVE ACTIVITY IN THE CAT. 132685 02-03



## Subject Index

- EFFECTS OF ANTIHISTAMINIC AGENTS UPON THE ELECTROGRAPHIC ACTIVITY OF THE CAT BRAIN: A POWER SPECTRAL DENSITY STUDY. 132686 02-03
- SOME BENZOFURAN CARBOXAMIDE DERIVATIVES WITH NARCOTIC AND ANALGESIC ACTIVITY. 133216 02-02
- THE EFFECT OF L-DOPA ON CORTICAL AND SUBCORTICAL ELECTRICAL ACTIVITY IN NORMAL UNRESTRAINED RATS. 133294 02-03
- CENTRAL ANTICHOLINERGIC ACTIVITY OF: 2,2-DIPHENYL 4-(3-AZABICYCLONON-3-YL) BUTYRAMIDE HYDROCHLORIDE (SC-13639). 133303 02-02
- EFFECTS OF MORPHINE AND ANTAGONISTS ON HYPOTHALAMIC CELL ACTIVITY. 133309 02-03
- DISSOCIATION OF VERTICAL AND HORIZONTAL COMPONENTS OF ACTIVITY IN RATS TREATED WITH LITHIUM CHLORIDE. 133521 02-04
- THE EFFECTS OF TRANLYCPROMINE AND CHLORPROMAZINE UPON THE SPONTANEOUS MOTOR ACTIVITY OF MICE. 133624 02-04
- THE EFFECT OF TRANSAMINE ON THE MONOAMINE OXIDASE ACTIVITY AND PSYCHONEURAL BEHAVIOR IN RATS IN A LABYRINTH. 133674 02-04
- SUBSTITUTED 3,4,5-TRIMETHOXYBENZAMIDES: CORRELATION BETWEEN INHIBITION OF PYRUVIC ACID OXIDATION AND ANTICONVULSANT ACTIVITY. 133745 02-03
- CHRONIC EFFECTS OF SINGLE NITROGEN MUSTARD INJECTION ON THE ACTIVITY RESPONSE OF ALBINO RATS. 134101 02-04
- ACUTE**
- A CLINICAL TRIAL OF BENZAZEPINE (SCH-12679) IN ACUTE SCHIZOPHRENIC PATIENTS. 118986 02-08
- IDENTIFICATION AND TREATMENT OF ACUTE PSYCHOTIC STATES SECONDARY TO THE USAGE OF OVER-THE-COUNTER SLEEPING PREPARATIONS. 120269 02-15
- COMPARISON OF THE CLINICAL AND ELECTROENCEPHALOGRAPHICAL EFFECTS OF MOLINDONE AND TRIFLUOPERAZINE IN ACUTE SCHIZOPHRENIC PATIENTS. 120824 02-08
- MICROSOMAL PENTOBARBITAL HYDROXYLASE ACTIVITY IN ACUTE VIRAL HEPATITIS. 121288 02-15
- ENHANCED ACTIVITY OF BENZOPYRENE HYDROXYLASE IN RAT LIVER AND LUNG AFTER ACUTE CANNABIS ADMINISTRATION. 122244 02-03
- CONTROLLED TRIAL OF PENFLURIDOL IN ACUTE PSYCHOSIS. 122885 02-08
- BRAIN AMINO ACIDS AS AFFECTED BY ACUTE AND CHRONIC ADMINISTRATION OF CHLORPROMAZINE. 122989 02-03
- TREATMENT OF ACUTE ALCOHOL WITHDRAWAL WITH CHLORMETHIAZOLE (HEMINEVRIN). 123886 02-11
- ACUTE EFFECTS OF DIPHENYLHYDANTOIN IN RELATION TO PLASMA LEVELS. 125029 02-13
- ACUTE PSYCHOSIS INDUCED BY PSYCHOTOMIMETIC DRUG ABUSE: CLINICAL FINDINGS. 126219 02-12
- ACUTE PSYCHOSIS INDUCED BY PSYCHOTOMIMETIC DRUG ABUSE: NEUROCHEMICAL FINDINGS. 126220 02-13
- PREMORBID ADJUSTMENT, PHENOTHIAZINE TREATMENT, AND REMISSION IN ACUTE SCHIZOPHRENICS. 126228 02-08
- MARIJUANA: ACUTE, CUMULATIVE, AND THERAPEUTIC EFFECTS. (UNPUBLISHED PAPER). 127418 02-13
- CHANGES IN STAFF ANXIETY AND ATTITUDES DURING A DOUBLE-BLIND STUDY OF HALOPERIDOL IN ACUTE SCHIZOPHRENICS WITHIN A STRUCTURED MILIEU. 128349 02-08
- ACUTE BRAIN SYNDROME ASSOCIATED WITH LITHIUM THERAPY. 129509 02-15
- AN ATTEMPT TO ADMINISTER NEUROLEPTICS WITH A PROLONGED EFFECT IN THE TREATMENT OF ACUTE PSYCHOTIC STATES. 132752 02-11
- EVALUATION OF PIPERACETAZINE (QUIDE) INJECTION IN ACUTE SCHIZOPHRENICS. 132896 02-08
- CEREBRAL DISTURBANCES IN PREGNANCY DUE TO ACUTE POISONING WITH STEMETIL. 133068 02-15

## Psychopharmacology Abstracts

- IMPORTANCE OF ADEQUATE DOSAGE DETERMINATION OF DRUG EFFICACY: TRIAL OF A NEW BUTYROPHENONE COMPOUND ON ACUTE SCHIZOPHRENICS. 133263 02-07
- THE PHARMACOKINETICS OF LITHIUM SALTS IN ACUTE STRAIN TESTS IN HEALTHY SUBJECTS. 133356 02-13
- THE NEUROLEPTIC ACTION OF OXAFLOMAZINE, PARTICULARLY IN ACUTE PSYCHOSES. 133626 02-11
- DEPOT PHENOTHIAZINE TREATMENT IN ACUTE PSYCHOSIS: A SEQUENTIAL COMPARATIVE STUDY. 134112 02-09
- ADDICTION**
- PHOBIC ANXIETY SYNDROME COMPLICATED BY DRUG DEPENDENCE AND ADDICTION. 122663 02-10
- PROGRESS REPORT ON THE ASSESSMENT PROGRAM OF THE NIMH ADDICTION RESEARCH CENTER. (UNPUBLISHED PAPER). 123040 02-17
- BRAIN AMINES AND BARBITURATE ADDICTION. 130644 02-03
- A CASE OF EARLY OXAZEPAM ADDICTION TREATED IN THE OUTPATIENT CLINIC. 133450 02-15
- ADDICTS**
- INAPPROPRIATE RESPONSE OF DRUG ADDICTS TO CARDIOTHORACIC SURGERY. 119039 02-15
- ANTIDEPRESSANT DRUG THERAPY: ADDICTS VERSUS NONADDICTS. 119758 02-14
- OXAZEPAM IN THE TREATMENT OF NEUROTIC DISTURBANCES AS WELL AS IN THE WITHDRAWAL MANAGEMENT OF ALCOHOLICS AND DRUG ADDICTS. 121600 02-10
- THE CHANGE OF BEHAVIOR PATTERN OF ALCOHOL ADDICTS TREATED WITH CYANAMIDE DOUBLE MEDICATION - OBSERVATIONS BY THEIR FAMILIES. 129088 02-11
- ADDING**
- HYPERTENSIVE EPISODES AFTER ADDING METHYLPHENIDATE (RITALIN) TO TRICYCLIC ANTIDEPRESSANTS: (REPORT OF THREE CASES AND REVIEW OF CLINICAL ADVANTAGES. 131348 02-15
- ADENINE**
- FURTHER CHARACTERIZATION OF A REDUCED NICOTINAMIDE ADENINE DINUCLEOTIDE PHOSPHATE DEPENDENT ALDEHYDE REDUCTASE FROM BOVINE BRAIN: INHIBITION BY PHENOTHIAZINE DERIVATIVES. 121634 02-03
- ADENOSINE**
- EFFECTS OF SOME ANALGESICS AND ANTIDEPRESSANTS ON THE NA... AND K... ADENOSINE TRIPHOSPHATASE FROM CORTICES OF BRAIN AND KIDNEY. 121668 02-13
- ADEQUATE**
- IMPORTANCE OF ADEQUATE DOSAGE DETERMINATION OF DRUG EFFICACY: TRIAL OF A NEW BUTYROPHENONE COMPOUND ON ACUTE SCHIZOPHRENICS. 133263 02-07
- ADJUSTMENT**
- PREMORBID ADJUSTMENT, PHENOTHIAZINE TREATMENT, AND REMISSION IN ACUTE SCHIZOPHRENICS. 126228 02-08
- ADMINISTER**
- AN ATTEMPT TO ADMINISTER NEUROLEPTICS WITH A PROLONGED EFFECT IN THE TREATMENT OF ACUTE PSYCHOTIC STATES. 132752 02-11
- ADMINISTRATION**
- THE EFFECTS OF CHRONIC IMIPRAMINE ADMINISTRATION ON RAT BRAIN LEVELS OF SEROTONIN, 5-HYDROXYINDOLEACETIC ACID, NOREPINEPHRINE AND DOPAMINE. 120359 02-03
- PIGMENTARY RETINOPATHY ASSOCIATED WITH THIORIDAZINE ADMINISTRATION. 120823 02-15
- ACCUMULATION AND ELIMINATION OF A NOVEL METABOLITE DURING CHRONIC ADMINISTRATION OF THE PHENOTHIAZINE DRUG PERAZINE TO RATS. 121198 02-03
- EFFECT OF PRETREATMENT WITH SPIRONOLACTONE, PHENOBARBITAL OR BETA-DIETHYLAMINOETHYL DIPHENYLPROPYL-ACETATE (SKF-525-A) ON TRITIUM LEVELS IN BLOOD, HEART AND LIVER OF RATS AT VARIOUS TIMES AFTER ADMINISTRATION OF 3H-DIGITOXIN. 121243 02-03
- DECREASE OF RIBONUCLEASE ACTIVITY OF ISOLATED RAT LIVER CYTOPLASMIC RIBOSOMES AFTER THE PHENOBARBITAL ADMINISTRATION. 121326 02-03

- TIME DEPENDENT CHANGES IN BRAIN 3H-NOREPINEPHRINE DISAPPEARANCE CAUSED BY L-DOPA ADMINISTRATION. 122170 02-03
- ROUTE OF ADMINISTRATION AND DRUG METABOLISM. 122241 02-03
- ENHANCED ACTIVITY OF BENZOPYRENE HYDROXYLASE IN RAT LIVER AND LUNG AFTER ACUTE CANNABIS ADMINISTRATION. 122244 02-03
- INHIBITORY EFFECTS OF CHRONIC ADMINISTRATION OF MORPHINE ON URIDINE AND THYMIDINE INCORPORATING ABILITIES OF MOUSE LIVER AND BRAIN SUBCELLULAR FRACTIONS. 122245 02-03
- BRAIN AMINO ACIDS AS AFFECTED BY ACUTE AND CHRONIC ADMINISTRATION OF CHLORPROMAZINE. 122989 02-03
- ACETYLCHOLINE LEVEL IN BRAIN STRUCTURES OF RATS FOLLOWING ADMINISTRATION OF LYSERGIC ACID DIETHYLAMIDE. 125256 02-03
- INCREASED AND DECREASED EATING FOLLOWING THC ADMINISTRATION. 125538 02-04
- ON THE ADMINISTRATION OF PSYCHOTROPIC DRUGS AND ITS SIDE-EFFECTS DETECTED BY LIVER FUNCTION TEST. 128952 02-08
- BEHAVIORAL EFFECTS OF PRENATAL ADMINISTRATION OF DIAZEPAM IN THE RAT. 131279 02-04
- DELTA<sup>9</sup>-TETRAHYDROCANNABINOL: TEMPORAL CORRELATION OF THE PSYCHOLOGIC EFFECTS AND BLOOD LEVELS AFTER VARIOUS ROUTES OF ADMINISTRATION. 131610 02-14
- PUNISHED AND UNPUNISHED OPERANT BEHAVIOR AFTER ATROPINE ADMINISTRATION TO THE VMM OF SQUIRREL MONKEYS. 132117 02-04
- THE MICROELECTROPHORETIC ADMINISTRATION OF NORADRENALINE, 5-HYDROXYTRYPTAMINE, ACETYLCHOLINE AND GLYCINE TO SACRAL PARASYMPATHETIC PREGANGLIONIC NEURONS. 132153 02-03
- THE EFFECTS OF CHRONIC ADMINISTRATION OF TRANS-DELTA<sup>9</sup>-TETRAHYDROCANNABINOL ON BEHAVIOR AND THE CARDIOVASCULAR SYSTEM OF DOGS. 132719 02-03
- EFFECTS OF SYSTEMIC ADMINISTRATION OF PROPRANOLOL ON THE TIMING BEHAVIOR (DRL-20) OF RATS. 132761 02-04
- COMMENTS ON THE ADVERSE EFFECT OF CONCURRENT PYRIDOXINE ADMINISTRATION ON THE EFFICACY OF L-DOPA IN TREATING PARKINSONISM. 133097 02-13
- CENTRAL ATROPINE-LIKE TOXICITY IN COMBINED PSYCHOTROPIC DRUG ADMINISTRATION. 133123 02-15
- TREMOR INHIBITION IN PARKINSON SYNDROME AFTER APOMORPHINE ADMINISTRATION UNDER L-DOPA AND DECARBOXYLASE INHIBITOR BASIC THERAPY. 133262 02-11
- EXCRETION OF VANILLYL-MANDELIC ACID, HOMOVANILLIC ACID, N-METHYL-NICOTINAMIDE, AND N-METHYL-2-PYRIDONE-5-CARBOXAMIDE IN URINE OF VOLUNTARY TEST PERSONS AND PSYCHIATRIC PATIENTS BEFORE AND AFTER ADMINISTRATION OF METHIONINE. 133265 02-13
- HISTOENZYMOLOGIC STUDIES OF THE BRAIN TISSUES AND INTERNAL ORGANS OF EXPERIMENTAL ANIMALS IN A SINGULAR ADMINISTRATION OF LSD-25. 133505 02-03
- EFFECTS OF CHRONIC PRAZEPAM ADMINISTRATION ON DRUG METABOLISM IN MAN AND RAT. 133685 02-13
- WHOLE-BODY AUTORADIOGRAPHY OF THE PREGNANT MOUSE AFTER ADMINISTRATION OF C14-DELTA<sup>9</sup>-THC. 133727 02-03
- ADMISSION**  
RELATIONSHIP OF LITHIUM METABOLISM TO MENTAL HOSPITAL ADMISSION AND HOMICIDE. 130473 02-17
- ADOLESCENTS**  
LITHIUM TREATMENT OF PSYCHOTIC CHILDREN AND ADOLESCENTS: A CONTROLLED CLINICAL TRIAL. 132189 02-09
- ADRENAL**  
EFFECT OF SEDUXEN ON THE FUNCTIONAL STATE OF THE ADRENAL CORTEX AND THYROID GLAND. 125265 02-04
- ADRENALECTOMIZED**  
CHLORPROMAZINE INDUCED ALTERNATIONS OF CARBOHYDRATE METABOLISM: EFFECT OF CHLORPROMAZINE PRETREATMENT ON THE INSULIN RESPONSE TO GLUCOSE AND TOLBUTAMIDE IN THE ADRENALECTOMIZED RAT. (PH.D. DISSERTATION). 130182 02-03
- ADRENALECTOMY**  
THE INFLUENCE OF ADRENALECTOMY, HYPOPHYSECTOMY, THYROIDECTOMY, CASTRATION, AND TESTOSTERONE ON APOMORPHINE INDUCED AGGRESSIVE BEHAVIOUR IN THE RAT. 120790 02-04
- ADRENALIN**  
PSYCHOPATHY AND PHYSIOLOGICAL RESPONSES TO ADRENALIN. 122371 02-11
- ADRENALINE**  
ADRENALINE OR PERIPHERAL NORADRENALINE DEPLETION AND PASSIVE AVOIDANCE IN THE RAT. 122059 02-03
- ADRENERGIC**  
EFFECTS OF HALOPERIDOL AND CHLORPROMAZINE ON CENTRAL ADRENERGIC AND CHOLINERGIC MECHANISMS IN RABBITS. 122026 02-04
- CHOLINERGIC AND ADRENERGIC EFFECTS OF ATROPINE AND PHYSOSTIGMINE ON BRAIN CHEMISTRY AND LEARNED BEHAVIOR. 122228 02-04
- PROTECTION BY DESIPRAMINE OF 6-HYDROXYDOPAMINE INDUCED DAMAGE TO ADRENERGIC NERVE TERMINALS IN MOUSE HEART. 122229 02-03
- GASTRIC LESIONS INDUCED BY RESTRAINT AND COLD EXPOSURE: ARE CENTRAL ADRENERGIC MECHANISMS INVOLVED. (UNPUBLISHED PAPER). 129461 02-03
- CHOLINERGIC EFFECTS ON ADRENERGIC NEUROTRANSMITTERS IN RABBIT BRAIN PARTS. 132690 02-03
- THE EFFECTS OF SOME BETA ADRENERGIC BLOCKING AGENTS ON THE CENTRAL AND PERIPHERAL ACTIONS OF TREMORINE AND OXOTREMORINE. 132759 02-03
- ADRENERGIC NEURON BLOCKADE BY CLONIDINE: COMPARISON WITH GUANETHIDINE AND LOCAL ANESTHETICS. 133132 02-03
- THE INTERACTION BETWEEN DESMETHYLIMIPRAMINE AND GUANETHIDINE ON THE RABBIT ILEUM. THE IMPORTANCE OF THE NORADRENALINE UPTAKE PROCESS IN THE REVERSAL OF GUANETHIDINE INDUCED ADRENERGIC NEURONE BLOCKADE. 133214 02-03
- EFFECTS OF ADRENERGIC BLOCKADE ON CARDIOVASCULAR RESPONSES TO ETHANOL AND ACETALDEHYDE. 133301 02-03
- ADULT**  
CENTRAL EFFECTS OF AMINES IN ADULT FOWLS. 121297 02-03
- HYPERKINETIC ADULT: STUDY OF THE PARADOXICAL AMPHETAMINE RESPONSE. 128875 02-11
- PRENATAL CHLORPROMAZINE TREATMENT AND ADULT AVOIDANCE LEARNING. 131280 02-04
- ADVANTAGES**  
HYPERTENSIVE EPISODES AFTER ADDING METHYLPHENIDATE (RITALIN) TO TRICYCLIC ANTIDEPRESSANTS: (REPORT OF THREE CASES AND REVIEW OF CLINICAL ADVANTAGES). 131348 02-15
- THE ADVANTAGES OF THE COMBINATION TREATMENT (L-DOPA AND DECARBOXYLASE INHIBITOR) IN THE PARKINSON SYNDROME. 133518 02-11
- ADVERSE**  
PSYCHIATRIC ADVERSE REACTIONS TO METHYSERGIDE. 122358 02-15
- COMMENTS ON THE ADVERSE EFFECT OF CONCURRENT PYRIDOXINE ADMINISTRATION ON THE EFFICACY OF L-DOPA IN TREATING PARKINSONISM. 133097 02-13
- AFFECTIVE**  
CEREBROSPINAL FLUID LEVELS OF MHPG IN AFFECTIVE DISORDERS. 124330 02-13
- A CONTROLLED EVALUATION OF LITHIUM PROPHYLAXIS IN AFFECTIVE DISORDERS. 126205 02-09
- CATECHOLAMINE METABOLISM IN AFFECTIVE DISORDERS - IV. PRELIMINARY STUDIES OF NOREPINEPHRINE METABOLISM IN DEPRESSED PATIENTS TREATED WITH AMITRIPTYLINE. 127215 02-09
- DRUG THERAPY OF CLINICAL DEPRESSIONS - CURRENT STATUS AND IMPLICATIONS FOR RESEARCH ON NEUROPHARMACOLOGY OF THE AFFECTIVE DISORDERS. 127220 02-09
- LITHIUM CARBONATE PROPHYLAXIS IN AFFECTIVE DISORDERS. (CLINICAL VERSUS RESEARCH APPLICATIONS). 127880 02-09

# Subject Index

# Psychopharmacology Abstracts

- CATECHOLAMINE METABOLISM IN AFFECTIVE DISORDERS; A LONGITUDINAL STUDY OF A PATIENT TREATED WITH AMITRIPTYLINE AND ECT. 130109 02-09
- LITHIUM IN TREATMENT AND PREVENTION OF AFFECTIVE DISORDERS. 133094 02-09
- AFFERENT**  
THE EFFECT OF THE GABA ANTAGONISTS BICUCULLINE AND PICROTOXIN ON PRIMARY AFFERENT TERMINAL EXCITABILITY. 121964 02-03
- AFTER-DISCHARGE**  
TIME DRUG MODULATIONS OF PHOTICALLY EVOKED AFTER-DISCHARGE PATTERNS. 122062 02-03
- AFTERCARE**  
DRUG AND SOCIOTHERAPY IN THE AFTERCARE OF SCHIZOPHRENIC PATIENTS: ONE-YEAR RELAPSE RATES. 131963 02-08
- AGE**  
CHLORPROMAZINE IN CHRONIC SCHIZOPHRENIA: THE EFFECT OF AGE AND HOSPITALIZATION ON BEHAVIORAL DOSE-RESPONSE RELATIONSHIPS. 126227 02-08  
AGE AND LACK OF HANDLING AS FACTORS IN THE CONSUMPTION OF AN ETONITAZENE SOLUTION BY NAIVE RATS. 133133 02-04
- AGED**  
STATES OF AGITATION IN THE AGED. 121896 02-11
- AGELAIUS-PHOENICEUS**  
THE EFFECT OF TRANQUILIZATION UPON TERRITORY MAINTENANCE IN THE MALE RED-WINGED BLACKBIRD (AGELAIUS-PHOENICEUS). 129868 02-04
- AGES**  
PERAZINE AND IMIPRAMINE CONTENT IN THE TISSUES OF RATS OF DIFFERENT AGES. 133352 02-03
- AGGREGATED**  
HYPEROTHERMIA IN D-AMPHETAMINE TOXICITY IN AGGREGATED MICE OF DIFFERENT STRAINS. 120364 02-03
- AGGREGATION**  
AMPHETAMINE AGGREGATION EFFECT IN MICE UNDER CONDITIONS OF ALTERED MICROSOMAL ENZYMES. 133181 02-05
- AGGRESSION**  
SHOCK INDUCED AGGRESSION: EFFECTS OF 6-HYDROXYDOPAMINE AND OTHER PHARMACOLOGICAL AGENTS. 132680 02-04  
MARIHUANA AND SHOCK INDUCED AGGRESSION IN RATS. 133770 02-04
- AGGRESSIVE**  
THE INFLUENCE OF ADRENALECTOMY, HYPOPHYSECTOMY, THYROIDECTOMY, CASTRATION, AND TESTOSTERONE ON APOMORPHINE INDUCED AGGRESSIVE BEHAVIOUR IN THE RAT. 120790 02-04  
SPECIFIC ANTAGONISM BY DOPAMINE INHIBITORS OF ITEMS OF AMPHETAMINE INDUCED AGGRESSIVE BEHAVIOUR. 120791 02-04  
THE EFFECTS OF SOME DRUGS AFFECTING BRAIN 5-HT ON THE AGGRESSIVE BEHAVIOR AND SPONTANEOUS ELECTRICAL ACTIVITY OF THE CENTRAL NERVOUS SYSTEM OF THE RAT, FORMICA-RUFA. 120812 02-04  
EFFECT OF FENFLURAMINE, CHLORPHENTERMINE AND RELATED COMPOUNDS ON THE BEHAVIOR OF AGGRESSIVE MICE. 133131 02-04  
AGGRESSIVE BEHAVIOUR INDUCED BY MARIHUANA COMPOUNDS AND AMPHETAMINE IN RATS PREVIOUSLY MADE DEPENDENT ON MORPHINE. 133522 02-04
- AGING**  
TREATMENT OF PSYCHIC DISTURBANCES IN AGING INDIVIDUALS. 133642 02-11
- AGITATION**  
STATES OF AGITATION IN THE AGED. 121896 02-11
- AGONISTS**  
EFFECTS OF CHOLINERGIC AGONISTS AND ANTAGONISTS ON SELF-STIMULATION BEHAVIOR IN THE RAT. 120560 02-04  
ACTION AND INTERACTION OF CHOLINERGIC AGONISTS AND ANTAGONISTS ON SELF-STIMULATION. 133298 02-04
- AID**  
AID FOR ANGINA: TRANQUILIZERS? 121928 02-11
- AKATHISIA**  
AKATHISIA: A SIDE-EFFECT TO BE REMEMBERED. 126502 02-15
- AL-1612**  
THE USE OF AL-1612 ON ANXIOUS NEUROTIC OUTPATIENTS; A PRELIMINARY STUDY. 118987 02-09
- ALBINO**  
EFFECT OF THE IMIPRAMINE GROUP OF ANTIDEPRESSANTS ON THE SEROTONIN LEVEL AND ACTIVITY OF 5-OXYTRYPTOPHANDECARBOXYLASE IN THE BRAIN OF ALBINO RATS. 125260 02-03  
CHRONIC EFFECTS OF SINGLE NITROGEN MUSTARD INJECTION ON THE ACTIVITY RESPONSE OF ALBINO RATS. 134101 02-04
- ALCOHOL**  
ALCOHOL AND MARIHUANA: A COMPARISON OF EFFECTS ON A TEMPORALLY CONTROLLED OPERANT IN HUMANS. 122178 02-14  
TREATMENT OF ACUTE ALCOHOL WITHDRAWAL WITH CHLORMETHIAZOLE (HEMINEVRIN). 123886 02-11  
EFFECTS OF TRIHEXYPHENIDYL ON SCHEDULE INDUCED ALCOHOL DRINKING BY RATS. 125531 02-03  
THE CHANGE OF BEHAVIOR PATTERN OF ALCOHOL ADDICTS TREATED WITH CYANAMIDE DOUBLE MEDICATION - OBSERVATIONS BY THEIR FAMILIES. 129088 02-11  
MARIHUANA AND ALCOHOL: TIME PRODUCTION AND MEMORY FUNCTIONS. 129830 02-14  
CONTINGENT NEGATIVE VARIATION AMPLITUDES: MARIHUANA AND ALCOHOL. 129831 02-14  
ELENIUM-POLFA IN TREATMENT OF ALCOHOL WITHDRAWAL SYNDROMES. 133137 02-11  
ALCOHOL RELATED ILLNESSES - PART III. 133559 02-13  
INFLUENCE OF ALCOHOL INTAKE, LENGTH OF ABSTINENCE AND MEPROBAMATE ON THE RATE OF ETHANOL METABOLISM IN MAN. 133599 02-11
- ALCOHOLICS**  
OXAZEPAM IN THE TREATMENT OF NEUROTIC DISTURBANCES AS WELL AS IN THE WITHDRAWAL MANAGEMENT OF ALCOHOLICS AND DRUG ADDICTS. 121600 02-10
- ALCOHOLISM**  
THE USE OF ANTABUSE AS A DETERRENT TO ALCOHOLISM. 124068 02-11  
PREVENTION OF ALCOHOLISM. 133864 02-11
- ALDEHYDE**  
FURTHER CHARACTERIZATION OF A REDUCED NICOTINAMIDE ADENINE DINUCLEOTIDE PHOSPHATE DEPENDENT ALDEHYDE REDUCTASE FROM BOVINE BRAIN. INHIBITION BY PHENOTHIAZINE DERIVATIVES. 121634 02-03
- ALERT**  
THE ACTION OF SOME ANTICONVULSANT DRUGS ON COBALT INDUCED EPILEPSY AND ON THE BEMEGRIDE THRESHOLD IN ALERT CATS. 123631 02-03
- ALKALI**  
ALLEVIATION OF BARBITURATE INHIBITION ON THE OXIDATIVE ACTIVITY OF SUBMITOCHONDRIAL PARTICLES BY ALKALI. 122230 02-03
- ALKALINE**  
SERUM TRANSAMINASES AND ALKALINE PHOSPHATASE IN SCHIZOPHRENIA. 118934 02-08
- ALKALOIDS**  
PEYOTE AND RELATED ALKALOIDS XIV: MESCALOXYLIC ACID AND MESCALORUVIC ACID, THE NOVEL AMINO ACID ANALOGS OF MESCALINE. 121285 02-01  
PEYOTE ALKALOIDS: IDENTIFICATION IN THE MEXICAN CACTUS PELECYPHORA ASELLIFORMIS EHRENBURG. 132873 02-01  
PHARMACOLOGICAL STUDIES OF NEW INDOLE ALKALOIDS, RUGULOVASINE A AND B HYDROCHLORIDE; EFFECTS OF BOTH ALKALOIDS ON CARDIOVASCULAR AND CENTRAL NERVOUS SYSTEM, AND SMOOTH MUSCLES. 133217 02-02  
OPIUM ALKALOIDS XII: QUANTITATIVE DETERMINATION OF MORPHINE IN OPIUM BY ISOTOPE DILUTION. 133744 02-06



- ALLERGIC**  
ALLERGIC REACTION TO METHYLPHENIDATE. 133804 02-15
- ALLEVIATION**  
ALLEVIATION OF BARBITURATE INHIBITION ON THE OXIDATIVE ACTIVITY OF SUBMITOCHONDRIAL PARTICLES BY ALKALI. 122230 02-03  
THE USE OF ANTIHISTAMINES FOR THE ALLEVIATION OF URINARY RETENTION CAUSED BY PSYCHOTROPIC DRUGS. 131574 02-15
- ALLYL**  
DESTRUCTION OF CYTOCHROME-P-450 BY SECOBARBITAL AND OTHER BARBITURATES CONTAINING ALLYL GROUPS. 121551 02-03
- ALPHA-DIMETHYL-N**  
THE PHARMACOLOGY OF N,ALPHA-DIMETHYL-N,BETA-CHLOROETHYL-PHENETHYLAMINE. HCL - EFFECTS ON THE AUTONOMIC NERVOUS SYSTEM. 133295 02-03
- ALPHA-METHYL-F-TYROSINE**  
INTERACTION OF ANTICHOLINERGIC AGENTS WITH ALPHA-METHYL-P-TYROSINE AND D-AMPHETAMINE. 121306 02-04  
THE EFFECT OF NOREPINEPHRINE REPLENISHMENT ON ALPHA-METHYL-P-TYROSINE TREATED MONKEYS. 130110 02-04
- ALPHA-METHYL-TYROSINE**  
ALTERED NOREPINEPHRINE METABOLISM FOLLOWING EXPERIMENTAL SPINAL CORD INJURY. PART 2: PROTECTION AGAINST TRAUMATIC SPINAL CORD HEMORRHAGIC NECROSIS BY NOREPINEPHRINE SYNTHESIS BLOCKADE WITH ALPHA-METHYL-TYROSINE. 121067 02-03
- ALTERATION**  
TEMPORARY ALTERATION OF CEREBROVASCULAR PERMEABILITY TO PLASMA PROTEIN DURING DRUG-INDUCED SEIZURES. 122177 02-03  
EFFECT OF BOL ON THE LSD INDUCED ALTERATION OF FLICKER DISCRIMINATION. 133655 02-04
- ALTERATIONS**  
DRUG-INDUCED ALTERATIONS IN THE ACTIVITY OF RAT BRAIN CHOLINERGIC ENZYMES: I. IN VITRO AND IN VIVO EFFECT OF AMPHETAMINE. 120230 02-03  
RESERPINE INDUCED ALTERATIONS IN BRAIN AMINES AND THEIR RELATIONSHIP TO CHANGES IN THE INCIDENCE OF MINIMAL ELECTROSHOCK SEIZURES IN MICE. 120360 02-03  
ALTERATIONS BY CENTRALLY ACTING DRUGS OF THE SUPPRESSION OF SELF-STIMULATION BEHAVIOR IN THE RAT BY TETRABENAZINE, PHYSOSTIGMINE, CHLORPROMAZINE AND PENTOBARBITAL. 133473 02-04
- ALTERED**  
ACTIVE AVOIDANCE CONDITIONING: EFFECTS OF D-DEPRIVATION (DESYNCHRONIZED SLEEP DEPRIVATION) AND OF ALTERED BRAIN CATECHOLAMINES. 119832 02-03  
ALTERED CARBOHYDRATE METABOLISM DURING TREATMENT WITH LITHIUM CARBONATE. 120754 02-13  
ALTERED NOREPINEPHRINE METABOLISM FOLLOWING EXPERIMENTAL SPINAL CORD INJURY. PART 2: PROTECTION AGAINST TRAUMATIC SPINAL CORD HEMORRHAGIC NECROSIS BY NOREPINEPHRINE SYNTHESIS BLOCKADE WITH ALPHA-METHYL-TYROSINE. 121067 02-03  
ALTERED CALCIUM METABOLISM DUE TO ANTICONVULSANT DRUGS. 122019 02-11  
ALTERED RESPONSE TO APOMORPHINE IN 6-HYDROXYDOPAMINE TREATED RATS. 122444 02-03  
ALTERED METABOLISM OF SEROTONIN IN THE BRAIN OF THE RAT AFTER CHRONIC INGESTION OF D-AMPHETAMINE. 123938 02-03  
AMPHETAMINE AGGREGATION EFFECT IN MICE UNDER CONDITIONS OF ALTERED MICROSOAMAL ENZYMES. 133181 02-05
- ALTERING**  
THE EFFECT OF ALTERING LIVER MICROSOAMAL CO-BINDING HEMOPROTEIN COMPOSITION ON PENTOBARBITAL INDUCED ANESTHESIA. 122096 02-03
- ALTERNATION**  
EFFECTS OF CHLORDIAZEPoxide UPON SPONTANEOUS ALTERNATION AND THE HIPPOCAMPAL ELECTRICAL ACTIVITY IN WHITE RATS. 120792 02-04  
SEROTONERGIC AND CHOLINERGIC INVOLVEMENT IN HABITUATION OF ACTIVITY AND SPONTANEOUS ALTERNATION OF RATS IN A Y-MAZE. 131131 02-03
- EFFECTS OF SCOPOLAMINE ON SPATIAL DOUBLE ALTERNATION IN RATS. 131132 02-04  
EFFECTS OF DRUGS ON INTERTRIAL INTERVAL BEHAVIOR IN DELAYED ALTERNATION. 131284 02-04
- ALTERNATIONS**  
CHLORPROMAZINE INDUCED ALTERNATIONS OF CARBOHYDRATE METABOLISM: EFFECT OF CHLORPROMAZINE PRETREATMENT ON THE INSULIN RESPONSE TO GLUCOSE AND TOLBUTAMIDE IN THE ADRENALECTOMIZED RAT. (PH.D. DISSERTATION). 130182 02-03
- ALTERNATIVES**  
HALOPERIDOL, CLOPENTHIXOL, AND CHLORPROMAZINE IN CHRONIC SCHIZOPHRENIA: CHEMICALLY UNRELATED ANTIPSYCHOTICS AS THERAPEUTIC ALTERNATIVES. 122209 02-08
- AMANTADINE**  
LIVIDO-RETICULARIS IN PARKINSONS DISEASE PATIENTS TREATED WITH AMANTADINE HYDROCHLORIDE. 119028 02-15  
THE EFFECT OF AMANTADINE ON MOTOR ACTIVITY AND CATALEPSY IN RATS. 120017 02-04  
TREATMENT OF PARKINSONS DISEASE WITH AMANTADINE AND L-DOPA. 121175 02-15  
TREATMENT OF PARKINSONS DISEASE WITH AMANTADINE (SYMMETREL). 130020 02-11  
AMANTADINE IN PARKINSONS DISEASE: REVIEW OF MORE THAN TWO YEARS EXPERIENCE. 131948 02-11  
DEPRESSION BY AMANTADINE OF DRUG-INDUCED RIGIDITY IN THE RAT. 132681 02-03  
TREATMENT OF PARKINSONS DISEASE WITH VIREGYT (AMANTADINE HYDROCHLORIDE). 132805 02-07  
USE OF HYDROCHLORHYDRATE OF AMANTADINE IN PARKINSONS SYNDROME. 132986 02-11  
A QUALITATIVE AND QUANTITATIVE EVALUATION OF AMANTADINE IN THE TREATMENT OF PARKINSONS DISEASE. 133071 02-11  
AMANTADINE AND CATECHOLAMINE UPTAKE. 133767 02-03
- AMBUTONIUM**  
CENTRAL AND PERIPHERAL ACTIONS OF THE ACETYLCHOLINE ANTAGONIST, AMBUTONIUM BROMIDE. 133299 02-03
- AMINAZINE**  
EFFECT OF AMINAZINE AND IMASINE ON METABOLISM OF DICARBOXYLIC AMINO ACIDS AND THEIR DERIVATIVES (GLUTAMINE AND GAMMA-AMINOBUTYRIC ACID) IN CAT BRAIN. 121876 02-03  
INTERACTION OF THE EFFECT OF LYSERGIC ACID DIETHYLAMIDE AND AMINAZINE AT THE LEVEL OF INDIVIDUAL NEURONS OF THE MIDBRAIN RETICULAR FORMATION. 134457 02-03
- AMINE**  
THE EFFECTS OF ELECTROSHOCK THERAPY, LITHIUM AND TRICYCLIC ANTIDEPRESSANT TREATMENT ON PROBENECID INDUCED ACCUMULATIONS OF CSF AMINE METABOLITES IN DEPRESSED PATIENTS. (UNPUBLISHED PAPER). 125200 02-09
- AMINES**  
COMPARISON OF THE DOSE-RESPONSE EFFECTS OF MORPHINE ON BRAIN AMINES, ANALGESIA AND ACTIVITY IN MICE. 119037 02-03  
EFFECT OF FOUR AMPHETAMINES ON BRAIN BIOGENIC AMINES AND THEIR METABOLITES. 119057 02-03  
THE ROLE OF METABOLISM IN TEMPERATURE DEPENDENT SUPERSENSITIVITY OF GUINEA-PIG ATRIA TO SYMPATHOMIMETIC AMINES. 120235 02-03  
RESERPINE INDUCED ALTERATIONS IN BRAIN AMINES AND THEIR RELATIONSHIP TO CHANGES IN THE INCIDENCE OF MINIMAL ELECTROSHOCK SEIZURES IN MICE. 120360 02-03  
REGIONAL RELEASE OF AROMATIC AMINES FROM TISSUES OF THE RAT BRAIN IN VITRO. 120524 02-03  
AMPHETAMINE ANALOGS AND BRAIN AMINES. 120832 02-03  
EFFECTS OF L-DOPA ON THE EEG AND BRAIN AMINES OF UNRESTRAINED RATS. 121063 02-03  
CENTRAL EFFECTS OF AMINES IN ADULT FOWLS. 121297 02-03

- SOME EFFECTS OF THE HALLUCINOGENIC DRUG 2,5 DIMETHOXY-4-METHYLAMPHETAMINE ON THE METABOLISM OF BIOGENIC AMINES IN THE RAT BRAIN. 121305 02-03
- ROLE OF BRAIN AMINES IN LEARNING ASSOCIATED WITH AMPHETAMINE STATE. 122201 02-04
- BIOGENIC AMINES AND THEIR IMPACT IN PSYCHIATRY. 126935 02-03
- AMINES AND APHRODISIACS IN CHRONIC SCHIZOPHRENIA. 128347 02-08
- BRAIN AMINES AND BARBITURATE ADDICTION. 130644 02-03
- THE EFFECT OF BENZODIAZEPINES ON BRAIN AMINES OF THE MOUSE. 132779 02-03
- INTERACTIONS OF GUANETHIDINE AND INDIRECT ACTING SYMPATHOMIMETIC AMINES. 133130 02-03
- AMINO**
- EFFECTS OF PHENOTHAZINES ON AMINO ACID TRANSPORT AND PROTEIN SYNTHESIS IN ISOLATED NERVE ENDINGS. 119056 02-03
- THE EFFECTS OF SOME TRYPTAMINE DERIVATIVES ON BRAIN MONOAMINES AND THEIR PRECURSOR AMINO ACIDS. 121279 02-03
- PEYOTE AND RELATED ALKALOIDS XIV: MESCALOXYLIC ACID AND MESCALORUVIC ACID, THE NOVEL AMINO ACID ANALOGS OF MESCALINE. 121285 02-01
- EFFECT OF AMINAZINE AND IMISINE ON METABOLISM OF DICARBOXYLIC AMINO ACIDS AND THEIR DERIVATIVES (GLUTAMINE AND GAMMA-AMINOBUTYRIC ACID) IN CAT BRAIN. 121876 02-03
- THE EFFECT OF THE NEURONAL EXCITANT N-METHYL-D-ASPARTATE ON THE METABOLISM OF MOUSE BRAIN AMINO ACIDS LABELLED FROM (14C)BICARBONATE AND L-(U-14C)ASPARTATE. 121965 02-03
- BRAIN AMINO ACIDS AS AFFECTED BY ACUTE AND CHRONIC ADMINISTRATION OF CHLORPROMAZINE. 122989 02-03
- AMINOPYRINE**
- OXIDATION AND GLUCURONIDATION OF CERTAIN DRUGS IN VARIOUS SUBCELLULAR FRACTIONS OF RAT LIVER: BINDING OF DESMETHYLIMIPRAMINE AND HEXOBARBITAL TO CYTOCHROME-P-450 AND OXIDATION AND GLUCURONIDATION OF DESMETHYLIMIPRAMINE, AMINOPYRINE, P-NITROPHENOL AND 1-NAPHTHOL. 124120 02-03
- AMITRIPTYLINE**
- THE ACTION OF IMIPRAMINE, AMITRIPTYLINE, DOXEPIN AND BUTRIPTYLINE IN AN OPERANT CONDITIONING SCHEDULE. 120014 02-04
- POTENTIATION OF AMITRIPTYLINE BY THYROID HORMONE. 120996 02-13
- PREDICTORS OF AMITRIPTYLINE RESPONSE IN OUTPATIENT DEPRESSIVES. 122426 02-14
- DOXEPIN AND AMITRIPTYLINE PERPHENAZINE IN MIXED ANXIOUS DEPRESSED NEUROTIC OUTPATIENTS: A COLLABORATIVE CONTROLLED STUDY. 123933 02-10
- CATECHOLAMINE METABOLISM IN AFFECTIVE DISORDERS - IV. PRELIMINARY STUDIES OF NOREPINEPHRINE METABOLISM IN DEPRESSED PATIENTS TREATED WITH AMITRIPTYLINE. 127215 02-09
- THE EFFECT OF THE AMITRIPTYLINE ON THE MASKED DEPRESSION - COMPARATIVE DOUBLE-BLIND CONTROLLED STUDY. 129737 02-09
- CATECHOLAMINE METABOLISM IN AFFECTIVE DISORDERS: A LONGITUDINAL STUDY OF A PATIENT TREATED WITH AMITRIPTYLINE AND ECT. 130109 02-09
- A DOUBLE-BLIND SEQUENTIAL COMPARISON OF DOXEPIN WITH AMITRIPTYLINE IN DEPRESSED PATIENTS. 131344 02-09
- THE EFFECT OF AMITRIPTYLINE MEDICATION ON DEPRESSED DIABETIC PATIENTS. 131814 02-13
- THE USE OF A FIXED DOSAGE COMBINATION OF AMITRIPTYLINE AND CHLORDIAZEPOXIDE IN THE TREATMENT OF PATIENTS SUFFERING FROM ANXIETY AND DEPRESSION. 132754 02-09
- AMNESIA**
- RETROGRADE AMNESIA FOR DISCRIMINATED TASTE AVERSIONS: A MEMORY DEFICIT. 120556 02-04
- THE CHOLINERGIC SYSTEM, AMNESIA AND MEMORY. 122390 02-04
- AMNESIC**
- AMNESIC EFFECTS OF SCOPOLAMINE. 133726 02-04
- AMOTIVATIONAL**
- AMOTIVATIONAL SYNDROME: THE REAL MANAGEMENT PROBLEM OF SCHIZOPHRENIA. 121902 02-08
- AMOXAPINE**
- CLINICAL TRIAL OF AMOXAPINE (CL-67772) WITH DEPRESSED PATIENTS. 132895 02-07
- A PILOT STUDY OF AMOXAPINE (CL-67772) IN DEPRESSED INPATIENTS. 132951 02-07
- AMP**
- EFFECT OF DRUGS THAT MODIFY 3,5 AMP CONCENTRATIONS ON MORPHINE ANALGESIA. 119303 02-03
- THE EFFECTS OF PROPRANOLOL AND ELECTRICAL STIMULATION ON THE CYCLIC 3,5 AMP CONTENT OF ISOLATED CEREBRAL TISSUE. 122357 02-03
- AMPHETAMINE**
- STUDIES ON THE MECHANISM OF AMPHETAMINE INDUCED LIPOLYSIS IN THE RAT. 119031 02-03
- DISPOSITION AND BEHAVIORAL EFFECTS OF AMPHETAMINE AND BETA,BETA DIFLUOROAMPHETAMINE IN MICE. 119058 02-04
- DRUG-INDUCED ALTERATIONS IN THE ACTIVITY OF RAT BRAIN CHOLINERGIC ENZYMES: I. IN VITRO AND IN VIVO EFFECT OF AMPHETAMINE. 120230 02-03
- STERIC REQUIREMENTS FOR CATECHOLAMINE UPTAKE BY RAT BRAIN SYNAPTOSOMES: STUDIES WITH RIGID ANALOGS OF AMPHETAMINE. 120357 02-03
- SPECIFIC ANTAGONISM BY DOPAMINE INHIBITORS OF ITEMS OF AMPHETAMINE INDUCED AGGRESSIVE BEHAVIOUR. 120791 02-04
- AMPHETAMINE ANALOGS AND BRAIN AMINES. 120832 02-03
- EFFECTS OF AMPHETAMINE AND PILOCARPINE ON EATING BEHAVIOR IN RATS WITH CHRONICALLY LOW ACETYLCHOLINESTERASE LEVELS. 121177 02-04
- BLOCKADE BY PIMOZIDE OF (L) AMPHETAMINE INDUCED HYPERKINESIA IN MICE. 121316 02-04
- THE EFFECT OF L-DOPA AND (L) AMPHETAMINE ON THE LOCOMOTOR ACTIVITY AFTER PIMOZIDE AND PHENOXYBENZAMINE. 121317 02-04
- ROLE OF BRAIN AMINES IN LEARNING ASSOCIATED WITH AMPHETAMINE STATE. 122201 02-04
- THE EFFECTS OF SELECTIVE LESIONING OF BRAIN SEROTONIN OR CATECHOLAMINE CONTAINING NEURONES ON THE ANORECTIC ACTIVITY OF FENFLURAMINE AND AMPHETAMINE. 122243 02-03
- THE CENTRAL HYPOTENSIVE ACTION OF AMPHETAMINE, EPHEDRINE, PHENTERMINE, CHLORPHENTERMINE AND FENFLURAMINE. 122446 02-03
- BEHAVIOURAL AND BIOCHEMICAL COMPARISON OF AMPHETAMINE DERIVATIVES, COCAINE, BENZTROPINE, AND TRICYCLIC ANTIDEPRESSANT DRUGS. 122571 02-03
- STEREOTYPIC AND ANTICATALEPTIC ACTIVITIES OF AMPHETAMINE AFTER INTRACEREBRAL INJECTIONS. 122573 02-03
- CATECHOLAMINES IN THE BRAIN AS MEDIATORS OF AMPHETAMINE PSYCHOSIS. 122659 02-13
- AN INVESTIGATION OF AMPHETAMINE ANOREXIA UNDER THREE MOTIVATIONAL CONDITIONS OF FREE FEEDING. 122956 02-04
- COMMENTS ON GENERALIZATIONS RELATED TO THE EXPERIMENTAL EFFECTS OF AMPHETAMINE. 123008 02-13
- THE DOSE-RESPONSE EFFECT OF AMPHETAMINE UPON AVOIDANCE BEHAVIOR IN THE RAT SEEN AS A FUNCTION OF INCREASING STEREOTYPY. 123935 02-04
- BETA-ADRENERGIC BLOCKING AGENTS AND AMPHETAMINE OR APOMORPHINE INDUCED STEREOTYPED BEHAVIOR IN RATS. 123937 02-04
- AMPHETAMINE WITHDRAWAL**
- IMPLICATIONS OF AMPHETAMINE INDUCED STEREOTYPED BEHAVIOR AS A MODEL FOR TARDIVE DYSKINESIAS. 124254 02-14
- THE NEUROPHYSIOLOGICAL EFFECTS OF AMPHETAMINE UPON THE CAT AMYGDALA. 126230 02-13
- 127340 02-13

- HYPERKINETIC ADULT: STUDY OF THE PARADOXICAL AMPHETAMINE RESPONSE.** 128875 02-11
- SCHEDULE-DEPENDENT EFFECTS IN AMPHETAMINE AND MORPHINE SELF-ADMINISTRATION BY SQUIRREL MONKEY.** 131446 02-04
- PHARMACOLOGICAL IMPLICATIONS OF THE CHANGES OF BRAIN MONOAMINE TURNOVER RATES ELICITED BY (L) AMPHETAMINE AND SOME CHEMICALLY RELATED COMPOUNDS. (UNPUBLISHED PAPER).** 132368 02-03
- AMPHETAMINE AGGREGATION EFFECT IN MICE UNDER CONDITIONS OF ALTERED MICROSOMAL ENZYMES.** 133181 02-05
- AGGRESSIVE BEHAVIOUR INDUCED BY MARIHUANA COMPOUNDS AND AMPHETAMINE IN RATS PREVIOUSLY MADE DEPENDENT ON MORPHINE.** 133522 02-04
- CYCLIC-AMP IN BRAIN AREAS: EFFECTS OF AMPHETAMINE AND NOREPINEPHRINE ASSESSED THROUGH THE USE OF MICROWAVE RADIATION AS A MEANS OF TISSUE FIXATION.** 133713 02-03
- INTRACELLULAR LOCALIZATION AND CO-FACTOR REQUIREMENT OF AMPHETAMINE TETRAZOLIUM REDUCTASE OF GUINEA-PIG BRAIN.** 133763 02-03
- EXTENT OF PLASMA PROTEIN BINDING OF AMPHETAMINE IN DIFFERENT SPECIES.** 133780 02-13
- AMPHETAMINE PSYCHOSIS: A MODEL SCHIZOPHRENIA MEDIATED BY CATECHOLAMINES.** 134118 02-15
- AMPHETAMINES**
- EFFECT OF FOUR AMPHETAMINES ON BRAIN BIOGENIC AMINES AND THEIR METABOLITES. 119057 02-03
- EFFECT OF AMPHETAMINES ON TRYPTOPHAN CONCENTRATIONS IN MICE AND RATS. 119301 02-03
- SYMPOSIUM: BEHAVIOR MODIFICATION BY DRUGS. I. PHARMACOLOGY OF THE AMPHETAMINES. 121990 02-13
- AMPHETAMINES. 124328 02-17
- PROBLEMS IN IDENTIFICATION OF METHYLENEDIOXY AND METHOXY AMPHETAMINES. 125748 02-01
- AMPLITUDES**
- CONTINGENT NEGATIVE VARIATION AMPLITUDES: MARIHUANA AND ALCOHOL. 129831 02-14
- AMYGDALA**
- THE NEUROPHYSIOLOGICAL EFFECTS OF AMPHETAMINE UPON THE CAT AMYGDALA. 127340 02-13
- THE ROLE OF THE AMYGDALA IN ESCAPE AVOIDANCE BEHAVIORS. 127344 02-04
- AMYLOBARBITONE**
- THE BEHAVIOR OF WORKER AND NON-WORKER RATS UNDER THE INFLUENCE OF (-)DELTA9-TRANS-TETRAHYDROCANNABINOL, CHLORPROMAZINE AND AMYLOBARBITONE. 119981 02-04
- THE EFFECTS OF PROCAINE, AMYLOBARBITONE ON DRUG-INDUCED CHANGES IN THE SURFACE POTENTIALS OF AN ISOLATED SYMPATHETIC GANGLION. 121302 02-03
- ANAFRANIL**
- CLINICAL OBSERVATIONS IN ANAFRANIL THERAPY. 121900 02-09
- CLINICAL AND ELECTROENCEPHALOGRAPHIC EFFECTS OF ANAFRANIL TREATMENT IN DEPRESSION. 123884 02-13
- ANALGESIA**
- COMPARISON OF THE DOSE-RESPONSE EFFECTS OF MORPHINE ON BRAIN AMINES, ANALGESIA AND ACTIVITY IN MICE. 119037 02-03
- EFFECT OF DRUGS THAT MODIFY 3,5 AMP CONCENTRATIONS ON MORPHINE ANALGESIA. 119303 02-03
- EFFECTS OF INTRAVENTRICULAR INJECTED 6-HYDROXYDOPAMINE OR MIDBRAIN RAPHE LESION ON MORPHINE ANALGESIA IN RATS. 122396 02-03
- ANALGESIC**
- CHEMICAL SYNTHESIS AND ANALGESIC EFFECT OF MORPHINE ETHERAL SULFATES. 119052 02-03
- ANALGESIC ACTIVITY OF DELTA9-TETRAHYDROCANNABINOL IN THE RAT AND MOUSE. 122200 02-04
- CLINICAL EVALUATION OF ANALGESIC DRUGS. 133141 02-13
- SOME BENZOFURAN CARBOXAMIDE DERIVATIVES WITH NARCOTIC AND ANALGESIC ACTIVITY.** 133216 02-02
- ANALGESICS**
- EFFECTS OF SOME ANALGESICS AND ANTIDEPRESSANTS ON THE NA<sub>+</sub> AND K<sup>+</sup> ADENOSINE TRIPHOSPHATASE FROM CORTICES OF BRAIN AND KIDNEY. 121668 02-13
- ANALOGS**
- STERIC REQUIREMENTS FOR CATECHOLAMINE UPTAKE BY RAT BRAIN SYNAPTOSOMES: STUDIES WITH RIGID ANALOGS OF AMPHETAMINE. 120357 02-03
- AMPHETAMINE ANALOGS AND BRAIN AMINES. 120832 02-03
- PEYOTE AND RELATED ALKALOIDS XIV: MESCALOXYLIC ACID AND MESCALORUVIC ACID, THE NOVEL AMINO ACID ANALOGS OF MESCALINE. 121285 02-01
- SYNTHESIS OF 7,8 DIHYDROXYCHLORPROMAZINE AND ANALOGS. 123841 02-01
- ANALYSIS**
- AN ANALYSIS OF DRUG EFFECTS IN MICE EXPOSED TO A SIMPLE NOVEL ENVIRONMENT. 124153 02-04
- AN ELECTROPHYSIOLOGICAL ANALYSIS OF HALLUCINOGENS. 127519 02-13
- CONDITIONED REFLEX ANALYSIS OF CHRONIC SCHIZOPHRENIAS. 131571 02-08
- AN ANALYSIS OF THE EFFECT OF RESERPINE UPON PONTO-GENICULO-OCCIPITAL WAVE ACTIVITY IN THE CAT. 132685 02-03
- STRUCTURAL ANALYSIS OF TROPINES: STRUCTURE OF BENZOYL TROPINE AND BENZOYL-PSI-TROPINE (TROPACOCAINE) AND THEIR CHOLINOLYTIC ACTIONS. 132802 02-01
- A NEUROLOGICAL ANALYSIS OF THE ACTION OF TRANQUILLIZER DERIVATIVES OF BENZODIAZEPINE. 133506 02-13
- ANALYTICAL**
- THE ANALYTICAL TOXICOLOGY OF ETHCHLORVYNOL. (PH.D. DISSERTATION). 130184 02-06
- ANALYZED**
- DIGITAL COMPUTER ANALYZED SLEEP ELECTROENCEPHALOGRAM (SLEEP PRINTS) IN PREDICTING ANXIOLYTIC PROPERTIES OF CLORAZEPATE DIPOTASSIUM (TRANXENE). 132950 02-14
- ANESTHESIA**
- MICROCIRCULATORY RESPONSES IN THE BAT WING TO GLUCAGON WITH AND WITHOUT BARBITURATE ANESTHESIA (36515). 121289 02-03
- THE EFFECT OF ALTERING LIVER MICROSOMAL CO-BINDING HEMOPROTEIN COMPOSITION ON PENTOBARBITAL INDUCED ANESTHESIA. 122096 02-03
- THE CATALEPTIC STATE INDUCED BY KETAMINE: A REVIEW OF THE NEUROPHARMACOLOGY OF ANESTHESIA. 133743 02-03
- ANESTHETIC**
- CYCLIZATION OF THREE N-OMEGA-HALOALKYL-N-METHYLAMINOACETOXYLIDIDE DERIVATIVES IN RELATION TO THEIR LOCAL ANESTHETIC EFFECT IN VITRO AND IN VIVO. 122182 02-03
- ANESTHETICS**
- EFFECTS OF ANESTHETICS ON SODIUM UPTAKE INTO RAT BRAIN CORTEX IN VITRO. 121210 02-03
- THE EFFECTS OF ANESTHETICS ON SYNAPTIC EXCITATION AND INHIBITION IN THE OLFACTORY BULB. (UNPUBLISHED PAPER). 132508 02-03
- ADRENERGIC NEURON BLOCKADE BY CLONIDINE: COMPARISON WITH GUANETHIDINE AND LOCAL ANESTHETICS. 133132 02-03
- ANGINA**
- AID FOR ANGINA: TRANQUILIZERS? 121928 02-11
- ANGIOTENSIN**
- INTERACTIONS OF ANGIOTENSIN, PHENOXYBENZAMINE AND PROPRANOLOL ON NORADRENALINE RELEASE DURING SYMPATHETIC NERVE STIMULATION. 122568 02-03
- ANIMAL**
- STUDIES ON THE PARADOXICAL INTERACTION OF PHYSOSTIGMINE AND PENTOBARBITAL ON REGIONAL BRAIN ACETYLCHOLINE CONTENT OF VARIOUS ANIMAL SPECIES. 121296 02-03



# Subject Index

# Psychopharmacology Abstracts

## ANIMALS

THE DENSITY AND ULTRASTRUCTURE OF THE PURKINJE CELLS FOLLOWING DIPHENYHYDANTOIN TREATMENT IN ANIMALS AND MAN.

119002 02-03

DEGENERATION OF CENTRAL NORADRENALINE NEURONS AFTER 6-HYDROXYDOPAMINE IN NEWBORN ANIMALS.

122225 02-03

FURTHER PHARMACOLOGICAL STUDY ON ANTIAGGRESSIVE, SEDATIVE AND MUSCLE RELAXANT 8-CHLORO-6-PHENYL-4H-S-TRIAZOLOBENZODIAZEPINE (D-407A) IN EXPERIMENTAL ANIMALS: COMPARATIVE STUDY ON POTENCY AND DURATION.

130909 02-04

HISTOENZYMOLOGIC STUDIES OF THE BRAIN TISSUES AND INTERNAL ORGANS OF EXPERIMENTAL ANIMALS IN A SINGULAR ADMINISTRATION OF LSD-25.

133505 02-03

## ANORECTIC

THE EFFECTS OF SELECTIVE LESIONING OF BRAIN SEROTONIN OR CATECHOLAMINE CONTAINING NEURONES ON THE ANORECTIC ACTIVITY OF FENFLURAMINE AND AMPHETAMINE.

122243 02-03

THE ANORECTIC EFFECT OF A LONG-ACTING PREPARATION OF PHENTERMINE (DUROMINE).

133472 02-11

## ANOREXIA

AN INVESTIGATION OF AMPHETAMINE ANOREXIA UNDER THREE MOTIVATIONAL CONDITIONS OF FREE FEEDING.

122956 02-04

## ANOREXIGENIC

ANOREXIGENIC ACTIVITY OF INTERMITTENT DEXTROAMPHETAMINE WITH AND WITHOUT MEPROBAMATE.

119169 02-13

## ANT

THE EFFECTS OF SOME DRUGS AFFECTING BRAIN 5-HT ON THE AGGRESSIVE BEHAVIOR AND SPONTANEOUS ELECTRICAL ACTIVITY OF THE CENTRAL NERVOUS SYSTEM OF THE ANT, FORMICA-RUFA.

120812 02-04

## ANTABUSE

THE USE OF ANTABUSE AS A DETERRENT TO ALCOHOLISM.

124068 02-11

SAFETY OF DISULFIRAM (ANTABUSE).

131617 02-15

## ANTAGONISM

MORPHINE INDUCED INCREASES IN THE INCORPORATION OF 14C-TYROSINE INTO 14C-DOPAMINE AND 14C-NOREPINEPHRINE IN THE MOUSE BRAIN: ANTAGONISM BY NALOXONE AND TOLERANCE.

120358 02-03

SPECIFIC ANTAGONISM BY DOPAMINE INHIBITORS OF ITEMS OF AMPHETAMINE INDUCED AGGRESSIVE BEHAVIOUR.

120791 02-04

PARTIAL ANTAGONISM OF THE BEHAVIOURAL AND NEUROCHEMICAL EFFECTS OF PHENCYCLIDINE BY DRUGS AFFECTING MONOAMINE METABOLISM.

120794 02-04

THE INDUCTION AND ANTAGONISM OF CENTRAL NERVOUS SYSTEM STIMULANT - INDUCED STEREOTYPED BEHAVIOR IN THE CAT.

122569 02-04

ANTAGONISM OF PENTYLENETETRAZOL EXCITATION BY ANTICONVULSANTS ON SINGLE BRAIN STEM NEURONS.

132676 02-03

XYLAMIDINE TOSYLATE: DIFFERENTIAL ANTAGONISM OF THE HYPOTHERMIC EFFECTS OF N,N DIMETHYLTRYPTAMINE, BUFOTENINE, AND 5-METHOXYTRYPTAMINE.

133528 02-03

DIFFERENTIAL ANTAGONISM, BY MER-25, OF BEHAVIORAL AND MORPHOLOGICAL EFFECTS OF ESTRADIOL BENZOATE IN RATS.

133714 02-04

## ANTAGONIST

CHLORPROMAZINE: ANOTHER GUANETHIDINE ANTAGONIST.

121216 02-13

CENTRAL AND PERIPHERAL ACTIONS OF THE ACETYLCHOLINE ANTAGONIST, AMBUTONIUM BROMIDE.

133299 02-03

PERFECT OPIATE ANTAGONIST

134033 02-13

## ANTAGONISTS

EFFECTS OF CHOLINERGIC AGONISTS AND ANTAGONISTS ON SELF-STIMULATION BEHAVIOR IN THE RAT.

120560 02-04

THE EFFECT OF THE GABA ANTAGONISTS BICUCULLINE AND PICROTOXIN ON PRIMARY AFFERENT TERMINAL EXCITABILITY.

121964 02-03

COMPARISON OF CHLORDIAZEPoxide, METHYSERGIDE, AND CINANSERIN AS MODIFIERS OF PUNISHED BEHAVIOR AND AS ANTAGONISTS OF N,N DIMETHYLTRYPTAMINE.

132776 02-04

NARCOTIC ANTAGONISTS: THE SEARCH ACCELERATES.

133082 02-13

ACTION AND INTERACTION OF CHOLINERGIC AGONISTS AND ANTAGONISTS ON SELF-STIMULATION.

133298 02-04

EFFECTS OF MORPHINE AND ANTAGONISTS ON HYPOTHALAMIC CELL ACTIVITY.

133309 02-03

## ANTIAGGRESSIVE

FURTHER PHARMACOLOGICAL STUDY ON ANTIAGGRESSIVE, SEDATIVE AND MUSCLE RELAXANT 8-CHLORO-6-PHENYL-4H-S-TRIAZOLOBENZODIAZEPINE (D-407A) IN EXPERIMENTAL ANIMALS: COMPARATIVE STUDY ON POTENCY AND DURATION.

130909 02-04

## ANTIAMINIC

PARKINSONS TREMOR, RELIEF BY AN ANTIAMINIC DRUG (BC-105): DISCUSSION ON THE BIOCHEMICAL PATHOGENESIS OF PARKINSONIAN TREMOR.

133517 02-11

## ANTIBACTERIAL

ANTIBACTERIAL ACTIVITY OF O-AMINO-N-HYDROXYBENZENESULFONAMIDES.

125359 02-01

## ANTICATALEPTIC

STEREOTYPIC AND ANTICATALEPTIC ACTIVITIES OF AMPHETAMINE AFTER INTRACEREBRAL INJECTIONS.

122573 02-03

## ANTICHOLINERGIC

INTERACTION OF ANTICHOLINERGIC AGENTS WITH ALPHA-METHYL-P-TYROSINE AND D-AMPHETAMINE.

121306 02-04

DOSE-RESPONSES AND RELATIONSHIPS BETWEEN ANTICHOLINERGIC ACTIVITY AND MOOD WITH TRICYCLIC ANTIDEPRESSANTS.

122193 02-14

CENTRAL ANTICHOLINERGIC ACTIVITY OF: 2,2 DIPHENYL 4-(3-AZABICYCLONON-3-YL) BUTYRAMIDE HYDROCHLORIDE (SC-13639).

133303 02-02

## ANTICONVULSANT

BRAIN CONCENTRATIONS OF LORAZEPAM AND OXAZEPAM AT EQUAL DEGREE OF ANTICONVULSANT ACTIVITY.

119302 02-03

ALTERED CALCIUM METABOLISM DUE TO ANTICONVULSANT DRUGS.

122019 02-11

THE ACTION OF SOME ANTICONVULSANT DRUGS ON COBALT INDUCED EPILEPSY AND ON THE BEAMEGRIDE THRESHOLD IN ALERT CATS.

123631 02-03

RELATIONSHIPS BETWEEN SERUM AND CEREBROSPINAL FLUID ANTICONVULSANT DRUG AND FOLIC ACID CONCENTRATIONS IN EPILEPTIC PATIENTS.

132710 02-13

SUBSTITUTED 3,4,5 TRIMETHOXYBENZAMIDES: CORRELATION BETWEEN INHIBITION OF PYRUVIC ACID OXIDATION AND ANTICONVULSANT ACTIVITY.

133745 02-03

## ANTICONVULSANTS

ANTICONVULSANTS.

130067 02-11

ANTICONVULSANTS AND PSYCHOTHERAPEUTIC AGENTS OF KNOWN ABSOLUTE CONFIGURATION. (PH.D. DISSERTATION).

130163 02-01

ANTAGONISM OF PENTYLENETETRAZOL EXCITATION BY ANTICONVULSANTS ON SINGLE BRAIN STEM NEURONS.

132676 02-03

## ANTICONVULSIVE

ELECTROENCEPHALOGRAPHIC CORRELATES IN OVERDOSAGE WITH ANTICONVULSIVE DRUGS.

122330 02-15

## ANTIDEPRESSANT

ANTIDEPRESSANT DRUG THERAPY: ADDICTS VERSUS NONADDICTS.

119758 02-14

WHICH ANTIDEPRESSANT FOR WHICH PATIENT?

119762 02-09

THE EFFECT OF IMMUNOSYMPATHECTOMY ON THE RESPONSES OF THE MOUSE TO RESERPINE AND VARIOUS ANTIDEPRESSANT AND STIMULANT DRUGS.

120011 02-03

THE COMPARATIVE ANTIDEPRESSANT VALUE OF L-TRYPTOPHAN AND IMIPRAMINE WITH AND WITHOUT ATTEMPTED POTENTIATION BY LIOTHYRONINE.

120995 02-09

BEHAVIOURAL AND BIOCHEMICAL COMPARISON OF AMPHETAMINE DERIVATIVES, COCAINE, BENZOTROPINE, AND TRICYCLIC ANTIDEPRESSANT DRUGS.

122571 02-03

THE EFFECTS OF ELECTROSHOCK THERAPY, LITHIUM AND TRICYCLIC ANTIDEPRESSANT TREATMENT ON PROBENECID INDUCED

- ACCUMULATIONS OF CSF AMINE METABOLITES IN DEPRESSED PATIENTS. (UNPUBLISHED PAPER). 125200 02-09
- CLINICAL AND EEG EFFECTS OF GB-94, A TETRACYCLIC ANTIDEPRESSANT (EEG MODEL IN DISCOVERY OF A NEW PSYCHOTROPIC DRUG). 132894 02-07
- PS-2747: A NEW ANTIDEPRESSANT AGENT. 133128 02-03
- ANTIDEPRESSANTS**
- EFFECTS OF SOME ANALGESICS AND ANTIDEPRESSANTS ON THE NA<sup>+</sup> AND K<sup>+</sup> ADENOSINE TRIPHOSPHATASE FROM CORTICES OF BRAIN AND KIDNEY. 121668 02-13
- OVERDOSAGE OF TRICYCLIC ANTIDEPRESSANTS: A REPORT OF TWO DEATHS AND A PROSPECTIVE STUDY OF 24 PATIENTS. 121976 02-15
- DOSE-RESPONSES AND RELATIONSHIPS BETWEEN ANTICHOLINERGIC ACTIVITY AND MOOD WITH TRICYCLIC ANTIDEPRESSANTS. 122193 02-14
- ROLE OF ANTIDEPRESSANTS AND NEUROLEPTICS IN THE TREATMENT OF DEPRESSION. 122976 02-09
- TRYPTOPHAN TRIALS IN TESTS FOR EVALUATION OF ANTIDEPRESSANTS. 125257 02-04
- EFFECT OF THE IMIPRAMINE GROUP OF ANTIDEPRESSANTS ON THE SEROTONIN LEVEL AND ACTIVITY OF 5-OXYTRYPTOPHANDECARBOXYLASE IN THE BRAIN OF ALBINO RATS. 125260 02-03
- HYPERTENSIVE EPISODES AFTER ADDING METHYLPHENIDATE (RITALIN) TO TRICYCLIC ANTIDEPRESSANTS: (REPORT OF THREE CASES AND REVIEW OF CLINICAL ADVANTAGES). 131348 02-15
- A CONTROLLED STUDY ON THE POSSIBLE EFFECT OF DIHYDROERGOTAMINE AGAINST DRYNESS OF THE MOUTH IN PATIENTS TREATED WITH TRICYCLIC ANTIDEPRESSANTS. 134312 02-13
- EFFECTS OF TWO ANTIDEPRESSANTS UPON CONCEPT LEARNING: PSYCHOPHYSIOLOGICAL PARAMETERS IN DEPRESSED HUMANS. 134850 02-08
- ANTIDEPRESSIVES**
- A DRUG-INDUCED CEREBRAL REACTION: A CASE OF MYOCLONIC STATUS UNDER TREATMENT WITH TRICYCLIC ANTIDEPRESSIVES. 122340 02-15
- ANTIURIRESIS**
- SEVERE POLYDIPSIA AND ANTIURIRESIS PRODUCED BY DIAZOXIDE. 130382 02-03
- ANTIEPILEPTIC**
- EFFECTS OF DIPHENYLHYDANTOIN AND OTHER ANTIEPILEPTIC DRUGS ON EPILEPTIFORM ACTIVITY AND PURKINJE CELL DISCHARGE RATES. 123632 02-03
- BLOOD LEVELS OF ANTIEPILEPTIC DRUGS - CHEMICAL DETERMINATION OF ANTIEPILEPTIC DRUGS IN BODY FLUIDS. 129211 02-06
- ANTIHISTAMINES**
- THE USE OF ANTIHISTAMINES FOR THE ALLEVIATION OF URINARY RETENTION CAUSED BY PSYCHOTROPIC DRUGS. 131574 02-15
- ANTIHISTAMINIC**
- EFFECTS OF ANTIHISTAMINIC AGENTS UPON THE ELECTROGRAPHIC ACTIVITY OF THE CAT BRAIN: A POWER SPECTRAL DENSITY STUDY. 132686 02-03
- ANTIOBESITY**
- ANTIOBESITY ACTION OF FENFLURAMINE. 118964 02-13
- ANTIPARKINSON**
- EVALUATING THE LONG-TERM NEED FOR ANTIPARKINSON DRUGS BY CHRONIC SCHIZOPHRENICS. 120699 02-08
- ANTIPARKINSONISM**
- THE EFFECT OF ELANTRINE, A NEW ANTIPARKINSONISM AGENT, ON DRUG-INDUCED TREMOR IN MICE. 132778 02-11
- ANTI-PSYCHOTIC**
- A STRATEGY FOR THE STUDY OF BEHAVIORAL MECHANISMS OF ANTI-PSYCHOTIC DRUG ACTION IN SCHIZOPHRENIA. 120122 02-08
- COMPARATIVE STUDY OF TWO ANTI-PSYCHOTIC DRUGS IN A STATE HOSPITAL. 130546 02-11
- ANTI-PSYCHOTICS**
- HALOPERIDOL, CLOPENTHIXOL, AND CHLORPROMAZINE IN CHRONIC SCHIZOPHRENIA: CHEMICALLY UNRELATED ANTI-PSYCHOTICS AS THERAPEUTIC ALTERNATIVES. 122209 02-08
- ANTISUBSTITUTION**
- A VOTE AGAINST ANTISUBSTITUTION REPEAL. 122079 02-17
- ANTITREMORINE**
- ANTITREMORINE EFFECTS OF SOME MONO AND DIACYLOXYTROPANES. 133306 02-02
- ANXIETY**
- A COMPARATIVE TRIAL OF DOXEPIN AND DIAZEPAM IN ANXIETY STATES. 119984 02-10
- BENZODIAZEPINES: ANXIETY REDUCING ACTIVITY BY REDUCTION OF SEROTONIN TURNOVER IN THE BRAIN. 121174 02-03
- A CLINICAL STUDY OF LIMBITROL IN THE TREATMENT OF ANXIETY/DEPRESSION IN GENERAL PRACTICE. 121309 02-10
- PIMOZIDE IN ANXIETY NEUROSIS. 121310 02-10
- PHOBIC ANXIETY SYNDROME COMPLICATED BY DRUG DEPENDENCE AND ADDICTION. 122663 02-10
- CHANGES IN STAFF ANXIETY AND ATTITUDES DURING A DOUBLE-BLIND STUDY OF HALOPERIDOL IN ACUTE SCHIZOPHRENICS WITHIN A STRUCTURED MILIEU. 128349 02-08
- REDUCTION OF ANXIETY IN GENETICALLY TIMID DOGS: DRUG-INDUCED SCHIZOKINESIS AND AUTOKINESIS. 132527 02-04
- THE USE OF A FIXED DOSAGE COMBINATION OF AMITRIPTYLINE AND CHLORDIAZEPOXIDE IN THE TREATMENT OF PATIENTS SUFFERING FROM ANXIETY AND DEPRESSION. 132754 02-09
- OPIRAN, ANXIETY AND PSYCHOSIS: CLINICAL TESTING OF A NEW INCISIVE NEUROLEPTIC. 132766 02-07
- CLORAZEPATE DIPOTASSIUM IN ANXIETY: A DOUBLE-BLIND TRIAL WITH DIAZEPAM CONTROLS. 132952 02-07
- MAJOR AND MINOR TRANQUILIZERS IN THE TREATMENT OF ANXIETY STATES. 133218 02-11
- ANXIOLYTIC**
- THE PLACE OF DOXEPIN AMONG THE ANXIOLYTIC - SEDATIVE DRUGS. 119170 02-13
- LOW DOSAGE PHENOTHIAZINE THERAPY: EFFECTIVE ANXIOLYTIC ACTION WITHOUT IMPAIRMENT TO INTELLECTUAL FUNCTION. 132715 02-10
- DIGITAL COMPUTER ANALYZED SLEEP ELECTROENCEPHALOGRAPH (SLEEP PRINTS) IN PREDICTING ANXIOLYTIC PROPERTIES OF CLORAZEPATE DIPOTASSIUM (TRANXENE). 132950 02-14
- ANXIOUS**
- THE USE OF AL-1612 ON ANXIOUS NEUROTIC OUTPATIENTS; A PRELIMINARY STUDY. 118987 02-09
- DOXEPIN AND AMITRIPTYLINE PERPHENAZINE IN MIXED ANXIOUS DEPRESSED NEUROTIC OUTPATIENTS: A COLLABORATIVE CONTROLLED STUDY. 123933 02-10
- BENZOCETAMINE AND CHLORDIAZEPOXIDE IN ANXIOUS OUTPATIENTS: A COLLABORATIVE STUDY. 130475 02-10
- CLINICAL EVALUATION OF THE EFFICACY OF MOLINDONE AND CHLORDIAZEPOXIDE IN ANXIOUS OUTPATIENTS. 132717 02-10
- MOTIVOL IN THE TREATMENT OF ANXIOUS DEPRESSION. 132955 02-07
- APHRODISIACS**
- AMINES AND APHRODISIACS IN CHRONIC SCHIZOPHRENIA. 126347 02-08
- APLYSIA**
- HABITUATION TO LIGHT AND SPONTANEOUS ACTIVITY IN THE ISOLATED SIPHON OF APLYSIA: THE EFFECTS OF SYNAPTICALLY ACTIVE PHARMACOLOGICAL AGENTS. (PH.D. DISSERTATION). 123950 02-04
- APOMORPHINE**
- A PIMOZIDE SENSITIVE EFFECT OF APOMORPHINE ON BODY TEMPERATURE OF THE RABBIT. 119050 02-03
- THE INFLUENCE OF ADRENALECTOMY, HYPOPHYSECTOMY, THYROIDECTOMY, CASTRATION, AND TESTOSTERONE ON APOMORPHINE INDUCED AGGRESSIVE BEHAVIOUR IN THE RAT. 120790 02-04
- APOMORPHINE AND ITS EFFECTS ON THE SPINAL CORD. 121282 02-03
- ALTERED RESPONSE TO APOMORPHINE IN 6-HYDROXYDOPAMINE TREATED RATS. 122444 02-03
- BETA-ADRENERGIC BLOCKING AGENTS AND AMPHETAMINE OR APOMORPHINE INDUCED STEREOTYPED BEHAVIOR IN RATS. 123937 02-04

# Subject Index

# Psychopharmacology Abstracts

- APOMORPHINE INDUCED HYPOTHERMIA IN MICE; A POSSIBLE DOPAMINERGIC EFFECT.** 133213 02-03
- TREMOR INHIBITION IN PARKINSON SYNDROME AFTER APOMORPHINE ADMINISTRATION UNDER L-DOPA AND DECARBOXYLASE INHIBITOR BASIC THERAPY.** 133262 02-11
- APPETITIVE**  
EFFECTS OF ACETOXYCYCLOHEXIMIDE ON APPETITIVE LEARNING AND MEMORY. 119442 02-04
- APPLICATIONS**  
LITHIUM CARBONATE PROPHYLAXIS IN AFFECTIVE DISORDERS. (CLINICAL VERSUS RESEARCH APPLICATIONS). 127880 02-09
- APPROACH**  
INTERACTION BETWEEN NEUROLEPTIC THERAPY AND SOCIO-THERAPEUTIC APPROACH: AN INVESTIGATION WITH PENFLURIDOL AND HALOPERIDOL. 133355 02-08
- APPROACHES**  
THERAPEUTIC APPROACHES TO TARDIVE DYSKINESIA: A REVIEW OF THE LITERATURE. 126229 02-14
- ARGININE**  
CLINICAL STUDY OF ARGININE ASPARTATE IN SECONDARY SEXUAL IMPOTENCIES. 132753 02-11
- ARGININE-N-ACETYL-ASPARTATE**  
EXPERIMENTAL PSYCHOCLINICAL TREATMENT OF THE SEVERELY MENTALLY RETARDED WITH ARGININE-N-ACETYL-ASPARTATE (AAA). 132772 02-11
- ARGYREIA-NEVOSA**  
PHYSIOLOGICAL DISPOSITION OF ISOERGINE (FROM ARGYREIA-NEVOSA (BURM. F.) BOJER-CONVOLVULACEAE) AND ITS EFFECT ON THE CONDITIONED AVOIDANCE RESPONSE IN RATS. 120012 02-03
- AROMATIC**  
REGIONAL RELEASE OF AROMATIC AMINES FROM TISSUES OF THE RAT BRAIN IN VITRO. 120524 02-03
- EFFECTS OF PERIPHERAL AROMATIC L-AMINO ACIDS DECARBOXYLASE INHIBITOR ON L-(2-14C)-3,4 DIHYDROXYPHENYLALANINE METABOLISM IN MAN. 121301 02-11
- PHOTOOTOXICITY AND PHOTONUCLEOPHILIC AROMATIC SUBSTITUTION IN CHLORPROMAZINE. 122246 02-01
- AROUSAL**  
STRENGTH OF THE NERVOUS SYSTEM AS A FUNCTION OF PERSONALITY TYPE AND LEVEL OF AROUSAL. 119068 02-14
- THE STABILITY AND SENSITIVITY OF MEASURES OF THOUGHT, PERCEPTION AND EMOTIONAL AROUSAL. 120118 02-08
- ARRHYTHMIAS**  
SUPPRESSION BY CLONIDINE (5T-155) OF CARDIAC ARRHYTHMIAS INDUCED BY DIGITALIS. 122181 02-03
- ARTANE**  
ARTANE, A HALLUCINOGEN 122352 02-15
- ASELLIFORMIS**  
PEYOTE ALKALOIDS: IDENTIFICATION IN THE MEXICAN CACTUS PELECYPHORA ASELLIFORMIS EHRENBERG. 132873 02-01
- ASPARTATE**  
THE EFFECT OF THE NEURONAL EXCITANT N-METHYL-D-ASPARTATE ON THE METABOLISM OF MOUSE BRAIN AMINO ACIDS LABELLED FROM (14C)BICARBONATE AND L-(U-14C)ASPARTATE. 121965 02-03
- CLINICAL STUDY OF ARGININE ASPARTATE IN SECONDARY SEXUAL IMPOTENCIES. 132753 02-11
- ASSAY**  
NOREPINEPHRINE AND DOPAMINE: ASSAY BY MASS FRAGMENTOGRAPHY IN THE PICO-MOLE RANGE. 120529 02-01
- DEVELOPMENT OF METHODOLOGY FOR ASSAY OF CANNABINOIDS IN BODY FLUIDS AND TISSUES. (UNPUBLISHED PAPER). 132370 02-06
- ASSESSED**  
CYCLIC-AMP IN BRAIN AREAS: EFFECTS OF AMPHETAMINE AND NOREPINEPHRINE ASSESSED THROUGH THE USE OF MICROWAVE RADIATION AS A MEANS OF TISSUE FIXATION. 133713 02-03
- ASSESSMENT**  
PROGRESS REPORT ON THE ASSESSMENT PROGRAM OF THE NIMH ADDICTION RESEARCH CENTER. (UNPUBLISHED PAPER). 123040 02-17
- WORK STUDY IN THE ASSESSMENT OF THE EFFECTS OF PHENOTHIAZINES IN SCHIZOPHRENIA. 127856 02-08
- LEVOAMPHETAMINE AND DEXTROAMPHETAMINE: COMPARATIVE EFFICACY IN THE HYPERKINETIC SYNDROME: ASSESSMENT BY TARGET SYMPTOMS. 129834 02-14
- CLINICAL PSYCHOPHARMACOLOGICAL ASSESSMENT AND LONG-TERM OBSERVATION USING ELECTRONIC DATA PROCESSING. 133482 02-17
- ASTHENIC**  
THE ASTHENIC STATES AND ONE OF THEIR MODERN TREATMENTS. 121895 02-11
- ATHETOID**  
ATHETOID AND CHOREIFORM HYPERKINESIAS PRODUCED BY CAUDATE APPLICATION OF DOPAMINE IN CATS. 122195 02-04
- ATOMS**  
SPECIFICITY OF THE EFFECT OF LITHIUM INJECTIONS ON THE ENTRY OF CARBON ATOMS OF GLUCOSE INTO MOUSE BRAIN IN VIVO. 132777 02-03
- ATPASE**  
COMPARATIVE STUDY ON THE INHIBITION OF NA<sup>+</sup>, K<sup>+</sup> ACTIVATED ATPASE ACTIVITY BY CHLORPROMAZINE, PROMAZINE, IMIPRAMINE, AND THEIR MONODESMETHYL METABOLITES. 122091 02-03
- ATRIA**  
THE ROLE OF METABOLISM IN TEMPERATURE DEPENDENT SUPERSENSITIVITY OF GUINEA-PIG ATRIA TO SYMPATHOMIMETIC AMINES. 120235 02-03
- ATROPINE**  
EFFECTS OF ATROPINE ON PERFORMANCE OF AN S(D)-S(DELTA) DISCRIMINATION IN RATS. 120103 02-04
- CENTRAL BLOCKADE OF (METHYL)ATROPINE ON CARBACHOL DRINKING: A DOSE-RESPONSE STUDY. 121380 02-04
- EFFECTS OF PROPRANOLOL, PHENTOLAMINE AND METHYL ATROPINE ON CARDIOVASCULAR FUNCTION IN THE SQUIRREL MONKEY DURING BEHAVIORAL EXPERIMENTS. 122179 02-03
- CHOLINERGIC AND ADRENERGIC EFFECTS OF ATROPINE AND PHYSOSTIGMINE ON BRAIN CHEMISTRY AND LEARNED BEHAVIOR. 122228 02-04
- LOCOMOTOR ACTIVITY INCREASES PRODUCED BY INTRAHIPPOCAMPAL AND INTRASEPTAL ATROPINE IN RATS. 122391 02-04
- SYNERGISM BY ATROPINE OF CENTRAL STIMULANT PROPERTIES OF PHENYLPROPANOLAMINE. 122399 02-03
- CENTRAL EFFECTS OF ATROPINE UPON AVERSIVE CLASSICAL CONDITIONING IN RABBITS. 123934 02-04
- EFFECTS OF ATROPINE SULPHATE ON REPEATED EXTINCTION PERFORMANCE IN HIPPOCAMPECTOMIZED RATS. 123936 02-04
- PUNISHED AND UNPUNISHED OPERANT BEHAVIOR AFTER ATROPINE ADMINISTRATION TO THE VMH OF SQUIRREL MONKEYS. 132117 02-04
- ATROPINE-LIKE**  
CENTRAL ATROPINE-LIKE TOXICITY IN COMBINED PSYCHOTROPIC DRUG ADMINISTRATION. 133123 02-15
- ATTACKS**  
REPORT ON A CASE OF STATUS-PSYCHOMOTRICUS WITH TONIC TWILIGHT ATTACKS IN DRUG OVERDOSE. 133331 02-15
- ATTENTION**  
THE USE OF A SIMPLE TEST OF ATTENTION AS A MEASURE OF DRUG EFFECTS IN SCHIZOPHRENIC PATIENTS. 120085 02-08
- THE EFFECT OF METHYLPHENIDATE (RITALIN) ON SUSTAINED ATTENTION IN HYPERACTIVE CHILDREN. 122198 02-11
- ATTITUDES**  
CHANGES IN STAFF ANXIETY AND ATTITUDES DURING A DOUBLE-BLIND STUDY OF HALOPERIDOL IN ACUTE SCHIZOPHRENICS WITHIN A STRUCTURED MILIEU. 128349 02-08
- AUDITORY**  
AUDITORY SIGNAL DETECTION IN SCHIZOPHRENICS. 120081 02-14

- SOME FEATURES OF THE AUDITORY EVOKED RESPONSE IN SCHIZOPHRENICS. 126225 02-13
- AUDITORY SIGNAL DETECTION IN PARANOID AND NONPARANOID SCHIZOPHRENICS. 129838 02-08
- EFFECT OF SALICYLATE ON AUDITORY DETECTION THRESHOLDS MEASURED BY CONDITIONED AVOIDANCE RESPONSES: SENSORY IMPAIRMENT OR MOTIVATION DECREMENT 132543 02-03
- AUGMENTATION**  
AUGMENTATION OF CEREBELLAR PURKINJE CELL DISCHARGE RATE AFTER DIPHENYLHYDANTOIN. 123633 02-03
- AUTISM**  
UPTAKE AND LOSS OF 14C-DOPAMINE BY PLATELETS FROM CHILDREN WITH INFANTILE AUTISM. 119968 02-11
- AUTOKINESIS**  
REDUCTION OF ANXIETY IN GENETICALLY TIMID DOGS: DRUG-INDUCED SCHIZOKINESIS AND AUTOKINESIS. 132527 02-04
- AUTONOMIC**  
THE PHARMACOLOGY OF N,ALPHA-DIMETHYL-N,BETA-CHLOROETHYL-PHENETHYLAMINE. HCL - EFFECTS ON THE AUTONOMIC NERVOUS SYSTEM. 133295 02-03
- AUTORADIOGRAPHY**  
WHOLE-BODY AUTORADIOGRAPHY OF THE PREGNANT MOUSE AFTER ADMINISTRATION OF C14-DELTA9-THC. 133727 02-03
- AVERSION**  
EFFECTS OF CHLORDIAZEPOXIDE AND ETHANOL ON THE EXTINCTION OF A CONDITIONED TASTE AVERSION. 130364 02-04
- AVERSIONS**  
RETROGRADE AMNESIA FOR DISCRIMINATED TASTE AVERSIONS: A MEMORY DEFICIT. 120556 02-04
- CONDITIONING OF FOOD AVERSIONS BY INJECTIONS OF PSYCHOACTIVE DRUGS. 123983 02-04
- AVERSIVE**  
CENTRAL EFFECTS OF ATROPINE UPON AVERSIVE CLASSICAL CONDITIONING IN RABBITS. 123934 02-04
- AVIAN**  
EFFECTS OF PENTOBARBITAL ON THE VISUAL EVOKED RESPONSE IN THE AVIAN OPTIC TECTUM. 122012 02-03
- AVOIDANCE**  
ACTIVE AVOIDANCE CONDITIONING: EFFECTS OF D-DEPRIVATION (DESYNCHRONIZED SLEEP DEPRIVATION) AND OF ALTERED BRAIN CATECHOLAMINES. 119832 02-03
- PHYSIOLOGICAL DISPOSITION OF ISOERGINE (FROM ARGYREIA-NERVOSA (BURM. F.) BOJER-CONVOLVULACEAE) AND ITS EFFECT ON THE CONDITIONED AVOIDANCE RESPONSE IN RATS. 120012 02-03
- TWENTY-FOUR HOUR PROACTIVE FACILITATION OF AVOIDANCE AND DISCRIMINATION BY PENTYLENETETRAZOL. 120016 02-04
- SELECTIVE INCREASE IN AVOIDANCE RESPONDING BY METHAMPHETAMINE IN NAIVE RATS. 120786 02-04
- DRUG EFFECTS ON UNCONDITIONED LIGHT AVOIDANCE IN THE RAT. 120787 02-04
- THE CONCURRENT EFFECTS OF SCOPOLAMINE ON SPONTANEOUS MOTOR ACTIVITY AND THE ACQUISITION OF AN ACTIVE AVOIDANCE RESPONSE. 121276 02-04
- ACQUISITION AND PERFORMANCE EFFECTS OF SCOPOLAMINE AND OF TREATMENT WITHDRAWAL IN AVOIDANCE SITUATIONS. 122039 02-04
- ADRENALINE OR PERIPHERAL NORADRENALINE DEPLETION AND PASSIVE AVOIDANCE IN THE RAT. 122059 02-03
- PITUITARY HORMONES AND AVOIDANCE BEHAVIOR OF THE RAT. 122450 02-04
- THE DOSE-RESPONSE EFFECT OF AMPHETAMINE UPON AVOIDANCE BEHAVIOR IN THE RAT SEEN AS A FUNCTION OF INCREASING STEREOTYPY. 123935 02-04
- EFFECTS OF CHLORDIAZEPOXIDE ON PASSIVE AVOIDANCE RESPONSES IN RATS. 123939 02-04
- THE ROLE OF THE AMYGDALA IN ESCAPE AVOIDANCE BEHAVIORS. 127344 02-04
- PRENATAL CHLORPROMAZINE TREATMENT AND ADULT AVOIDANCE LEARNING. 131280 02-04
- EFFECTS OF INTERTRIAL CROSSING PUNISHMENT AND D-AMPHETAMINE SULFATE ON AVOIDANCE AND ACTIVITY IN FOUR SELECTIVELY BRED RAT STRAINS. 131293 02-04
- DRUG-INDUCED FACILITATION OF ACTIVE AVOIDANCE: A BEHAVIORAL EXPLANATION. 131436 02-04
- THE EFFECTS OF CHOLINERGIC AGENTS UPON BEHAVIOR CONTROLLED BY AN AVOIDANCE SCHEDULE THAT EMPLOYS SIGNAL RESPONSE INDEPENDENT SHOCK. 131449 02-04
- EFFECT OF SALICYLATE ON AUDITORY DETECTION THRESHOLDS MEASURED BY CONDITIONED AVOIDANCE RESPONSES: SENSORY IMPAIRMENT OR MOTIVATION DECREMENT 132543 02-03
- AVOIDANCE ACQUISITION AND CNS STIMULANTS. 133196 02-04
- PERMANENT FACILITATION OF AVOIDANCE BEHAVIOR BY D-AMPHETAMINE AND SCOPOLAMINE. 133377 02-04
- AXELROD**  
JULIUS AXELROD: A TRIUMPH FOR CREATIVE RESEARCH. 133098 02-17
- PERSPECTIVES IN NEUROPHARMACOLOGY: A TRIBUTE TO JULIUS AXELROD. 133110 02-17
- BACKGROUND**  
RELATIONSHIP OF PATIENT BACKGROUND CHARACTERISTICS TO EFFICACY OF PHARMACOTHERAPY IN DEPRESSION. 125968 02-10
- BAIT**  
BAIT SHYNESS DURING MORPHINE DEPENDENCE. 131447 02-04
- BAMIPINE**  
N-PHENYL-N-BENZYL-4-AMINO-1-METHYLPYPERIDIN HCL (BAMIPINE) COMBINED WITH 1-CYCLOHEXYL-1-METHYL 2 METHYLAMINOETHANE (CHP) FOR THE INTERIM AND TERMINAL TREATMENT OF DEPRESSIVE SYNDROMES. 122296 02-07
- BAR-PRESSING**  
CONDITIONED SUPPRESSION OF BAR-PRESSING BEHAVIOR BY STIMULI ASSOCIATED WITH DRUGS. 124223 02-04
- BARBITAL**  
EFFECTS OF BARBITAL ON DEPRIVATION INDUCED WATER CONSUMPTION BY RATS. 122033 02-04
- BARBITURATE**  
MICROCIRCULATORY RESPONSES IN THE BAT WING TO GLUCAGON WITH AND WITHOUT BARBITURATE ANESTHESIA (36515). 121289 02-03
- ALLEVATION OF BARBITURATE INHIBITION ON THE OXIDATIVE ACTIVITY OF SUBMITOCHONDRIAL PARTICLES BY ALKALI. 122230 02-03
- BRAIN AMINES AND BARBITURATE ADDICTION. 130644 02-03
- BARBITURATES**  
DESTRUCTION OF CYTOCHROME-P-450 BY SECOBARBITAL AND OTHER BARBITURATES CONTAINING ALLYL GROUPS. 121551 02-03
- THE EFFECT OF EXPERIMENTAL LOCAL INFLAMMATION ON THE ACTION OF BARBITURATES IN RAT. 133126 02-03
- BASALINE**  
DRUG EFFECTS ON BASELINE GO/NO-GO DISCRIMINATION AND SERIAL DISCRIMINATION REVERSAL LEARNING. 131285 02-04
- BAT**  
MICROCIRCULATORY RESPONSES IN THE BAT WING TO GLUCAGON WITH AND WITHOUT BARBITURATE ANESTHESIA (36515). 121289 02-03
- BC-105**  
PARKINSONS TREMOR, RELIEF BY AN ANTIAMINIC DRUG (BC-105): DISCUSSION ON THE BIOCHEMICAL PATHOGENESIS OF PARKINSONIAN TREMOR. 133517 02-11
- BEARING**  
PROLONGED METABOLISM OF PENTOBARBITAL IN ISOLATED PERFUSED LIVER OF TUMOR BEARING RATS. 122167 02-03
- BEHAVIOR**  
INDOLE METABOLISM AND BEHAVIOR IN DOG. 118931 02-04
- EFFECT OF 6-HYDROXYDOPAMINE ON CATECHOLAMINE CONCENTRATIONS AND BEHAVIOR IN THE MORPHINE TOLERANT RAT. 119048 02-04



## Subject Index

- THE BEHAVIOR OF WORKER AND NON-WORKER RATS UNDER THE INFLUENCE OF (-)DELTA9-TRANS-TETRAHYDROCANNABINOL, CHLORPROMAZINE AND AMYLOBARBITONE. 119981 02-04
- EFFECTS OF MONOAMINE OXIDASE INHIBITORS ON THE COPULATORY BEHAVIOR OF MALE RATS. 120009 02-04
- METHYLPHENIDATE INDUCED INHIBITION OF EXPLORATORY BEHAVIOR IN RATS. 120219 02-04
- EFFECTS OF CHOLINERGIC AGONISTS AND ANTAGONISTS ON SELF-STIMULATION BEHAVIOR IN THE RAT. 120560 02-04
- THE EFFECTS OF SOME DRUGS AFFECTING BRAIN 5-HT ON THE AGGRESSIVE BEHAVIOR AND SPONTANEOUS ELECTRICAL ACTIVITY OF THE CENTRAL NERVOUS SYSTEM OF THE ANT, FORMICA-RUFA. 120812 02-04
- EFFECTS OF AMPHETAMINE AND PILOCARPINE ON EATING BEHAVIOR IN RATS WITH CHRONICALLY LOW ACETYLCHOLINESTERASE LEVELS. 121177 02-04
- THE VARIABLE EFFECTS OF LSD-25 ON THE BEHAVIOR OF A HETEROGENEOUS GROUP OF CHILDHOOD SCHIZOPHRENICS. 121403 02-12
- EFFECTS OF IMIPRAMINE AND DEXTROAMPHETAMINE ON BEHAVIOR OF NEUROPSYCHIATRICALY IMPAIRED CHILDREN. 121449 02-14
- SYMPOSIUM: BEHAVIOR MODIFICATION BY DRUGS. III. THE CLINICAL USE OF STIMULANT DRUGS IN CHILDREN. 121988 02-14
- SYMPOSIUM: BEHAVIOR MODIFICATION BY DRUGS. II. PSYCHOLOGICAL EFFECTS OF STIMULANT DRUGS IN CHILDREN WITH MINIMAL BRAIN DYSFUNCTION. 121989 02-14
- SYMPOSIUM: BEHAVIOR MODIFICATION BY DRUGS. I. PHARMACOLOGY OF THE AMPHETAMINES. 121990 02-13
- THE EFFECTS OF P-CHLOROPHENYLALANINE ON THE MATING BEHAVIOR OF MALE RATS. 122036 02-04
- CHOLINERGIC AND ADRENERGIC EFFECTS OF ATROPINE AND PHYSOSTIGMINE ON BRAIN CHEMISTRY AND LEARNED BEHAVIOR. 122228 02-04
- PITUITARY HORMONES AND AVOIDANCE BEHAVIOR OF THE RAT. 122450 02-04
- THE INDUCTION AND ANTAGONISM OF CENTRAL NERVOUS SYSTEM STIMULANT - INDUCED STEREOTYPED BEHAVIOR IN THE CAT. 122569 02-04
- LEARNED BEHAVIOR AND LIMBIC SYSTEM ACTIVITY IN EXPERIMENTAL PORPHYRIA. 122706 02-03
- THE DOSE-RESPONSE EFFECT OF AMPHETAMINE UPON AVOIDANCE BEHAVIOR IN THE RAT SEEN AS A FUNCTION OF INCREASING STEREOTYPY. 123935 02-04
- BETA-ADRENERGIC BLOCKING AGENTS AND AMPHETAMINE OR APOMORPHINE INDUCED STEREOTYPED BEHAVIOR IN RATS. 123937 02-04
- CONDITIONED SUPPRESSION OF BAR-PRESSING BEHAVIOR BY STIMULI ASSOCIATED WITH DRUGS. 124223 02-04
- SOME ACTIONS OF PENTAZOCINE ON BEHAVIOR AND BRAIN MONOAMINES IN THE RAT. 124333 02-03
- IMPLICATIONS OF AMPHETAMINE INDUCED STEREOTYPED BEHAVIOR AS A MODEL FOR TARDIVE DYSKINESIAS. 126230 02-13
- CHANGES IN OPERANT BEHAVIOR AS AN INDEX OF A WITHDRAWAL STATE FROM MORPHINE IN RATS. 127528 02-04
- EFFECTS OF PSYCHOTROPIC DRUGS ON EMOTIONAL BEHAVIOR IN RATS WITH LIMBIC LESIONS, WITH SPECIAL REFERENCE TO OLFACTORY BULB ABLATIONS. 128458 02-04
- THE CHANGE OF BEHAVIOR PATTERN OF ALCOHOL ADDICTS TREATED WITH CYANAMIDE DOUBLE MEDICATION - OBSERVATIONS BY THEIR FAMILIES. 129088 02-11
- EFFECTS OF DEXTROAMPHETAMINE, CHLORPROMAZINE, AND HYDROXYZINE ON BEHAVIOR AND PERFORMANCE IN HYPERACTIVE CHILDREN. 129494 02-11
- EFFECTS OF DRUGS ON INTERTRIAL INTERVAL BEHAVIOR IN DELAYED ALTERNATION. 131284 02-04
- THE EFFECTS OF CHOLINERGIC AGENTS UPON BEHAVIOR CONTROLLED BY AN AVOIDANCE SCHEDULE THAT EMPLOYS SIGNAL RESPONSE INDEPENDENT SHOCK. 131449 02-04

## Psychopharmacology Abstracts

- PUNISHED AND UNPUNISHED OPERANT BEHAVIOR AFTER ATROPINE ADMINISTRATION TO THE VMH OF SQUIRREL MONKEYS. 132117 02-04
- THE EFFECTS OF CHRONIC ADMINISTRATION OF TRANS-DELTA9-TETRAHYDROCANNABINOL ON BEHAVIOR AND THE CARDIOVASCULAR SYSTEM OF DOGS. 132719 02-03
- EFFECTS OF SYSTEMIC ADMINISTRATION OF PROPRANOLOL ON THE TIMING BEHAVIOR (DRL-20) OF RATS. 132761 02-04
- COMPARISON OF CHLORDIAZEPOXIDE, METHYLSERGIDE, AND CINANSERIN AS MODIFIERS OF PUNISHED BEHAVIOR AND AS ANTAGONISTS OF N,N DIMETHYLTRYPTAMINE. 132776 02-04
- ELECTROENCEPHALOGRAPH AND BEHAVIOR OF RABBITS IN PHYSIOLOGICAL AND DRUG-INDUCED SLEEP: PART II: EEG OF THE RABBIT IN DRUG INDUCED SLEEP. 132829 02-04
- BEHAVIOR OF BIOPHYSICAL BLOOD PROPERTIES IN CHILDREN WITH MENTAL DISORDERS RECEIVING CHLORPROMAZINE TREATMENT. 133076 02-03
- EFFECT OF FENFLURAMINE, CHLORPHENTERMINE AND RELATED COMPOUNDS ON THE BEHAVIOR OF AGGRESSIVE MICE. 133131 02-04
- PERMANENT FACILITATION OF AVOIDANCE BEHAVIOR BY D-AMPHETAMINE AND SCOPOLAMINE. 133377 02-04
- THE EFFECTS OF SOME PHENOTHIAZINE DERIVATIVES ON THE BEHAVIOR OF WILD HERRING GULLS. (LARUS A. ARGENTATUS PONTOP). 133381 02-04
- ALTERATIONS BY CENTRALLY ACTING DRUGS OF THE SUPPRESSION OF SELF-STIMULATION BEHAVIOR IN THE RAT BY TETRABENAZINE, PHYSOSTIGMINE, CHLORPROMAZINE AND PENTOBARBITAL. 133473 02-04
- ELECTROENCEPHALOGRAPH AND BEHAVIOR OF RABBITS IN PHYSIOLOGICAL AND DRUG INDUCED SLEEP: PART III: INFLUENCE OF HYPNOTICS ON SLEEP BEHAVIOR OF RABBITS; DISCUSSION AND SUMMARY. 133672 02-03
- THE EFFECT OF TRANSAMINE ON THE MONOAMINE OXIDASE ACTIVITY AND PSYCHONEURAL BEHAVIOR IN RATS IN A LABYRINTH. 133674 02-04
- THE EFFECTS OF ENVIRONMENTAL ISOLATION ON BEHAVIOR AND REGIONAL RAT BRAIN TYROSINE HYDROXYLASE AND TRYPTOPHAN HYDROXYLASE ACTIVITIES. 133715 02-03
- DEFICITS IN FEEDING BEHAVIOR AFTER INTRAVENTRICULAR INJECTION OF 6-HYDROXYDOPAMINE IN RATS. 133750 02-03
- BEHAVIORAL**
- DISPOSITION AND BEHAVIORAL EFFECTS OF AMPHETAMINE AND BETA,BETA DIFLUOROAMPHETAMINE IN MICE. 119058 02-04
- A STRATEGY FOR THE STUDY OF BEHAVIORAL MECHANISMS OF ANTIPSYCHOTIC DRUG ACTION IN SCHIZOPHRENIA. 120122 02-08
- L-DOPA AND IMIPRAMINE: BIOCHEMICAL AND BEHAVIORAL INTERACTION. 120228 02-03
- BEHAVIORAL AND BIOCHEMICAL EFFECTS OF PREFERENTIALLY PROTECTING MONOAMINES IN THE BRAIN AGAINST THE ACTION OF RESERPINE. 120231 02-03
- CONTROL OF BEHAVIORAL SYMPTOMS IN PATIENTS WITH LONG-TERM ILLNESS. 120730 02-14
- SOME QUANTITATIVE BEHAVIORAL CHANGES IN L-DOPA THERAPY. 121884 02-14
- EFFECTS OF PROPRANOLOL, PHENTOLAMINE AND METHYL ATROPINE ON CARDIOVASCULAR FUNCTION IN THE SQUIRREL MONKEY DURING BEHAVIORAL EXPERIMENTS. 122179 02-03
- THYROID ACTION ON BEHAVIORAL PHYSIOLOGICAL EFFECTS AND DISPOSITION OF PHENOTHIAZINES. 122238 02-04
- COMPARISON OF BEHAVIORAL EFFECTS OF SYNTHETIC (-)DELTA9-TRANS-TETRAHYDROCANNABINOL AND MARIJUANA EXTRACT DISTILLATE IN CHIMPANZEES. 122398 02-04
- THE EEG AND BEHAVIORAL CONTINUUM OF THE CROCODILIAN CAIMAN-SCLEROPS. 2. EEG AND EMG SPIKE ACTIVITY. 124225 02-03
- CHLORPROMAZINE IN CHRONIC SCHIZOPHRENIA: THE EFFECT OF AGE AND HOSPITALIZATION ON BEHAVIORAL DOSE-RESPONSE RELATIONSHIPS. 126227 02-08

- BEHAVIORAL CONTROL OF DRUG METABOLISM AND BODY TEMPERATURE: BIOCHEMICAL AND PHYSIOLOGICAL CORRELATES. (PH.D. DISSERTATION).** 130761 02-03
- BEHAVIORAL EFFECTS OF PRENATAL ADMINISTRATION OF DIAZEPAM IN THE RAT.** 131279 02-04
- LEARNED BEHAVIORAL TOLERANCE TO MARIHUANA IN RATS.** 131281 02-04
- DRUG-INDUCED FACILITATION OF ACTIVE AVOIDANCE: A BEHAVIORAL EXPLANATION.** 131436 02-04
- BEHAVIORAL CHANGES OF CHRONIC SCHIZOPHRENIC PATIENTS GIVEN L-5-HYDROXYTRYPTOPHAN.** 132977 02-08
- BEHAVIORAL AND METABOLIC EFFECTS OF L-TRYPTOPHAN IN UNIPOLAR DEPRESSED PATIENTS. (UNPUBLISHED PAPER)** 132989 02-09
- INTERGENERIC BEHAVIORAL DIFFERENCES AMONG METHAMPHETAMINE TREATED MICE.** 133379 02-04
- DIFFERENTIAL ANTAGONISM, BY MER-25, OF BEHAVIORAL AND MORPHOLOGICAL EFFECTS OF ESTRADIOL BENZOATE IN RATS.** 133714 02-04
- RUBIDIUM: BIOCHEMICAL, BEHAVIORAL, AND METABOLIC STUDIES IN HUMANS.** 134111 02-09
- BEHAVIORS**
- THE ROLE OF THE AMYGDALA IN ESCAPE AVOIDANCE BEHAVIORS.** 127344 02-04
- BEHAVIOUR**
- EFFECTS OF A DOPAMINE DA-BETA-HYDROXYLASE INHIBITOR ON TIMING BEHAVIOUR.** 120013 02-04
- EFFECTS OF GAMMA-HYDROXYBUTYRATE ON CHICK BEHAVIOUR. ELECTROCORTICAL ACTIVITY AND CROSSED EXTENSOR REFLEXES.** 120124 02-05
- EFFECTS OF INTRAHIPPOCAMPAL INJECTIONS WITH METHYLSCOPOLAMINE AND NEOSTIGMINE UPON EXPLORATORY BEHAVIOUR IN TWO INBRED MOUSE STRAINS.** 120789 02-04
- THE INFLUENCE OF ADRENALECTOMY, HYPOPHYSECTOMY, THYROIDECTOMY, CASTRATION, AND TESTOSTERONE ON APOMORPHINE INDUCED AGGRESSIVE BEHAVIOUR IN THE RAT.** 120790 02-04
- SPECIFIC ANTAGONISM BY DOPAMINE INHIBITORS OF ITEMS OF AMPHETAMINE INDUCED AGGRESSIVE BEHAVIOUR.** 120791 02-04
- INTERACTION OF FENFLURAMINE WITH D-AMPHETAMINE INDUCED EXCITATORY BEHAVIOUR AND HYPERTHERMIA.** 122443 02-03
- THE SUBSTANTIA-NIGRA AND STEREOTYPED BEHAVIOUR.** 122575 02-03
- AGGRESSIVE BEHAVIOUR INDUCED BY MARIHUANA COMPOUNDS AND AMPHETAMINE IN RATS PREVIOUSLY MADE DEPENDENT ON MORPHINE.** 133522 02-04
- BEHAVIOURAL**
- PARTIAL ANTAGONISM OF THE BEHAVIOURAL AND NEUROCHEMICAL EFFECTS OF PHENCYCLIDINE BY DRUGS AFFECTING MONOAMINE METABOLISM.** 120794 02-04
- BEHAVIOURAL AND BIOCHEMICAL COMPARISON OF AMPHETAMINE DERIVATIVES, COCAINE, BENZOTROPINE, AND TRICYCLIC ANTIDEPRESSANT DRUGS.** 122571 02-03
- SOME OBSERVATIONS ON THE BEHAVIOURAL EFFECTS OF HALLUCINOGENIC DRUGS ON RATS: POTENTIATION BY TWO DRUGS AFFECTING MONOAMINE METABOLISM.** 133180 02-04
- DEVELOPMENT OF BEHAVIOURAL TOLERANCE TO NICOTINE IN THE RAT.** 133524 02-04
- DISSOCIATION OF THE BEHAVIOURAL AND ENDOCRINE EFFECTS OF LYSINE VASOPRESSIN BY TRYPTIC DIGESTION.** 133753 02-04
- BEMEGRIDE**
- THE ACTION OF SOME ANTICONVULSANT DRUGS ON COBALT INDUCED EPILEPSY AND ON THE BEMEGRIDE THRESHOLD IN ALERT CATS.** 123631 02-03
- BENZAZEPINE**
- A CLINICAL TRIAL OF BENZAZEPINE (SCH-12679) IN ACUTE SCHIZOPHRENIC PATIENTS.** 118986 02-08
- BENZOATE**
- DIFFERENTIAL ANTAGONISM, BY MER-25, OF BEHAVIORAL AND MORPHOLOGICAL EFFECTS OF ESTRADIOL BENZOATE IN RATS.** 133714 02-04
- BENZOCTAMINE**
- BENZOCTAMINE AND CHLORDIAZEPOXIDE IN ANXIOUS OUTPATIENTS: A COLLABORATIVE STUDY.** 130475 02-10
- BENZODIAZEPINE**
- TONIC STATUS-EPILEPTICUS PRECIPITATED BY INTRAVENOUS BENZODIAZEPINE IN FIVE PATIENTS WITH LENNOX-GASTAUT SYNDROME.** 123636 02-13
- A NEUROLOGICAL ANALYSIS OF THE ACTION OF TRANQUILLIZER DERIVATIVES OF BENZODIAZEPINE.** 133506 02-13
- BENZODIAZEPINES**
- BENZODIAZEPINES: ANXIETY REDUCING ACTIVITY BY REDUCTION OF SEROTONIN TURNOVER IN THE BRAIN.** 121174 02-03
- STUDIES ON BENZODIAZEPINES II: THE NEW SYNTHETIC METHODS OF 1,4 BENZODIAZEPINES.** 130913 02-01
- THE EFFECT OF BENZODIAZEPINES ON BRAIN AMINES OF THE MOUSE.** 132779 02-03
- BENZOFURAN**
- SOME BENZOFURAN CARBOXAMIDE DERIVATIVES WITH NARCOTIC AND ANALGESIC ACTIVITY.** 133216 02-02
- BENZOYL-PSI-TROPINE**
- STRUCTURAL ANALYSIS OF TROPINES: STRUCTURE OF BENZOYL TROPINE AND BENZOYL-PSI-TROPINE (TROPACOCAINE) AND THEIR CHOLINOLYTIC ACTIONS.** 132802 02-01
- BENZOYL TROPINE**
- STRUCTURAL ANALYSIS OF TROPINES: STRUCTURE OF BENZOYL TROPINE AND BENZOYL-PSI-TROPINE (TROPACOCAINE) AND THEIR CHOLINOLYTIC ACTIONS.** 132802 02-01
- BENZPYRENE**
- ENHANCED ACTIVITY OF BENZPYRENE HYDROXYLASE IN RAT LIVER AND LUNG AFTER ACUTE CANNABIS ADMINISTRATION.** 122244 02-03
- BENZTROPINE**
- BEHAVIOURAL AND BIOCHEMICAL COMPARISON OF AMPHETAMINE DERIVATIVES, COCAINE, BENZTROPINE, AND TRICYCLIC ANTIDEPRESSANT DRUGS.** 122571 02-03
- BENZYL OXYAMINES**
- INHIBITION OF DOPADECARBOXYLASE IN THE RAT BY A SERIES OF BENZYL OXYAMINES.** 121314 02-03
- BETA-ADRENERGIC**
- BETA-ADRENERGIC BLOCKING AGENTS AND AMPHETAMINE OR APOMORPHINE INDUCED STEREOTYPED BEHAVIOR IN RATS.** 123937 02-04
- BETA-ADRENOCEPTOR**
- PHARMACOLOGY OF A NEW BETA-ADRENOCEPTOR BLOCKING AGENT, THE 15219.** 122232 02-03
- BETA-CHLOROETHYL-PHENETHYLAMINE**
- THE PHARMACOLOGY OF N,ALPHA-DIMETHYL-N,BETA-CHLOROETHYL-PHENETHYLAMINE. HCL - EFFECTS ON THE AUTONOMIC NERVOUS SYSTEM.** 133295 02-03
- BETA-DIETHYLAMINOETHYL**
- EFFECT OF PRETREATMENT WITH SPIRONOLACTONE, PHENOBARBITAL OR BETA-DIETHYLAMINOETHYL DIPHENYLPROPYL-ACETATE (SKF-525-A) ON TRITIUM LEVELS IN BLOOD, HEART AND LIVER OF RATS AT VARIOUS TIMES AFTER ADMINISTRATION OF 3H-DIGITOXIN.** 121243 02-03
- BETA-PHENETHYLAMINE**
- THE EFFECT OF BETA-PHENETHYLAMINE UPON SPONTANEOUS MOTOR ACTIVITY IN MICE: A DUAL EFFECT ON LOCOMOTOR ACTIVITY.** 121315 02-04
- BICARBONATE**
- THE EFFECT OF THE NEURONAL EXCITANT N-METHYL-D-ASPARTATE ON THE METABOLISM OF MOUSE BRAIN AMINO ACIDS LABELLED FROM (14C)BICARBONATE AND L-(U-14C)ASPARTATE.** 121965 02-03
- BICUCULLINE**
- BICUCULLINE AND GABA METABOLIZING ENZYMES.** 120809 02-03
- THE EFFECT OF THE GABA ANTAGONISTS BICUCULLINE AND PICROTOXIN ON PRIMARY AFFERENT TERMINAL EXCITABILITY.** 121964 02-03
- ELECTROENCEPHALOGRAPHIC EFFECTS OF BICUCULLINE.** 130361 02-03
- N-METHYL BICUCULLINE, A CONVULSANT MORE POTENT THAN BICUCULLINE.** 133716 02-02

# Subject Index

# Psychopharmacology Abstracts

## BILE

- THE EFFECTS OF PHENOBARBITAL ON BILE SALTS AND BILIRUBIN IN PATIENTS WITH INTRAHEPATIC AND EXTRAHEPATIC CHOLESTASIS. 121580 02-13

## BILIRUBIN

- THE EFFECTS OF PHENOBARBITAL ON BILE SALTS AND BILIRUBIN IN PATIENTS WITH INTRAHEPATIC AND EXTRAHEPATIC CHOLESTASIS. 121580 02-13

## BINDING

- OXIDATION AND GLUCURONIDATION OF CERTAIN DRUGS IN VARIOUS SUBCELLULAR FRACTIONS OF RAT LIVER: BINDING OF DESMETHYLIMIPRAMINE AND HEXOBARBITAL TO CYTOCHROME-P-450 AND OXIDATION AND GLUCURONIDATION OF DESMETHYLIMIPRAMINE, AMINOPYRINE, P-NITROPHENOL AND 1-NAPHTHOL. 124120 02-03

- EXTENT OF PLASMA PROTEIN BINDING OF AMPHETAMINE IN DIFFERENT SPECIES. 133780 02-13

## BIOCHEMICAL

- L-DOPA AND IMIPRAMINE: BIOCHEMICAL AND BEHAVIORAL INTERACTION. 120228 02-03

- BEHAVIORAL AND BIOCHEMICAL EFFECTS OF PREFERENTIALLY PROTECTING MONOAMINES IN THE BRAIN AGAINST THE ACTION OF RESERPINE. 120231 02-03

- THE BIOCHEMICAL BASIS OF NEUROPHARMACOLOGY. 120487 02-17

- BEHAVIOURAL AND BIOCHEMICAL COMPARISON OF AMPHETAMINE DERIVATIVES, COCAINE, BENZOTROPINE, AND TRICYCLIC ANTIDEPRESSANT DRUGS. 122571 02-03

- BIOCHEMICAL AND PHARMACOLOGICAL STUDIES OF HUNTINGTONS CHOREA. (UNPUBLISHED PAPER). 125367 02-11

- BIOCHEMICAL AND PHARMACOLOGICAL VARIATIONS IN MANIC-DEPRESSIVE ILLNESS. 126500 02-09

- PSYCHIATRIC AND BIOCHEMICAL PROFILES OF LITHIUM THERAPY IN MANIA. (CASE REPORT). 130547 02-09

- BEHAVIORAL CONTROL OF DRUG METABOLISM AND BODY TEMPERATURE: BIOCHEMICAL AND PHYSIOLOGICAL CORRELATES. (PH.D. DISSERTATION). 130761 02-03

- PARKINSONS TREMOR, RELIEF BY AN ANTIAMINIC DRUG (BC-105): DISCUSSION ON THE BIOCHEMICAL PATHOGENESIS OF PARKINSONIAN TREMOR. 133517 02-11

- BRAIN BIOCHEMICAL CHANGES IN RATS TREATED WITH CHLORPROMAZINE AND ELECTROSHOCKED DURING EARLY POSTNATAL DEVELOPMENT. 133708 02-03

- RUBIDIUM: BIOCHEMICAL, BEHAVIORAL, AND METABOLIC STUDIES IN HUMANS. 134111 02-09

## BIOCHEMISTRY

- BIOCHEMISTRY OF DEPRESSION (A REVIEW OF THE LITERATURE). 120821 02-13

## BIOELECTRIC

- EFFECT OF NEUROTROPIC AGENTS ON CHANGES IN BIOELECTRIC ACTIVITY OF THE RENAL NERVE, EVOKED BY STIMULATION OF THE DESCENDING COLUMNS OF THE SPINAL CORD. 125262 02-03

## BIOGENIC

- EFFECT OF FOUR AMPHETAMINES ON BRAIN BIOGENIC AMINES AND THEIR METABOLITES. 119057 02-03

- SOME EFFECTS OF THE HALLUCINOGENIC DRUG 2,5 DIMETHOXY-4-METHYLAMPHETAMINE ON THE METABOLISM OF BIOGENIC AMINES IN THE RAT BRAIN. 121305 02-03

- BIOGENIC AMINES AND THEIR IMPACT IN PSYCHIATRY. 126935 02-03

## BIOLOGIC

- BIOLOGIC PSYCHIATRY IN PERSPECTIVE: THE DANGERS OF SECTARIANISM IN PSYCHIATRY. V. SOME INFERRED TRENDS. 129401 02-17

## BIOLOGICAL

- MIND AND BODY IN BIOLOGICAL PSYCHIATRY. 127517 02-14

## BIOPHYSICAL

- BEHAVIOR OF BIOPHYSICAL BLOOD PROPERTIES IN CHILDREN WITH MENTAL DISORDERS RECEIVING CHLORPROMAZINE TREATMENT. 133076 02-03

## BIOPSY

- DIAZEPAM SEDATION FOR LIVER BIOPSY. 118965 02-07

## BIOSYNTHESIS

- THE BIOSYNTHESIS OF OCTOPAMINE. 124171 02-03

## BIOSYNTHETIC

- NARCOTIC DRUGS: EFFECTS ON THE SEROTONIN BIOSYNTHETIC SYSTEMS OF THE BRAIN. 121320 02-03

## BIPHASIC

- BIPHASIC EFFECTS OF DELTA9-TETRAHYDROCANNABINOL ON VARIABLE INTERVAL SCHEDULE PERFORMANCE IN RATS. (UNPUBLISHED PAPER) 133171 02-04

## BISHYDROXYCOUMARIN

- ATTEMPTED ABORTION BY THE USE OF BISHYDROXYCOUMARIN. 121478 02-15

## BLACK

- THE BLACK CLOUD: THE RECOGNITION AND TREATMENT OF ENDOGENOUS DEPRESSION IN GENERAL PRACTICE. 122095 02-17

## BLACKBIRD

- THE EFFECT OF TRANQUILIZATION UPON TERRITORY MAINTENANCE IN THE MALE RED-WINGED BLACKBIRD (AGELAIUS-PHOENICEUS). 129868 02-04

## BLEPHAROSPASM

- HYSTERICAL BLEPHAROSPASM TREATED BY PSYCHOTHERAPY AND CONDITIONING PROCEDURES IN A GROUP SETTING. 131347 02-10

## BLOCKADE

- THE MECHANISM OF EXCITABILITY BLOCKADE BY CHLORPROMAZINE. 119162 02-03

- ALTERED NOREPINEPHRINE METABOLISM FOLLOWING EXPERIMENTAL SPINAL CORD INJURY. PART 2: PROTECTION AGAINST TRAUMATIC SPINAL CORD HEMORRHAGIC NECROSIS BY NOREPINEPHRINE SYNTHESIS BLOCKADE WITH ALPHA-METHYL-TYROSINE. 121067 02-03

- BLOCKADE BY PIMOZIDE OF (-) AMPHETAMINE INDUCED HYPERKINESIA IN MICE. 121316 02-04

- CENTRAL BLOCKADE OF (METHYL)ATROPINE ON CARBACHOL DRINKING: A DOSE-RESPONSE STUDY. 121380 02-04

- PHENITRONE: INEFFECTIVE BLOCKADE OF (-) TRANS-DELTA9-TETRAHYDROCANNABINOL IN MICE AND DOGS. 122448 02-03

- ADRENERGIC NEURON BLOCKADE BY CLONIDINE: COMPARISON WITH GUANETHIDINE AND LOCAL ANESTHETICS. 133132 02-03

- THE INTERACTION BETWEEN DESMETHYLIMIPRAMINE AND GUANETHIDINE ON THE RABBIT ILEUM. THE IMPORTANCE OF THE NORADRENALINE UPTAKE PROCESS IN THE REVERSAL OF GUANETHIDINE INDUCED ADRENERGIC NEURONE BLOCKADE. 133214 02-03

- EFFECTS OF ADRENERGIC BLOCKADE ON CARDIOVASCULAR RESPONSES TO ETHANOL AND ACETALDEHYDE. 133301 02-03

## BLOCKING

- PHARMACOLOGY OF A NEW BETA-ADRENOCEPTOR BLOCKING AGENT, THE 15219. 122232 02-03

- TREATMENT OF TARDIVE DYSKINESIA. II. SHORT-TERM EFFICACY OF DOPAMINE BLOCKING AGENTS HALOPERIDOL AND THIOPROPAZATE. 122704 02-11

- BETA-ADRENERGIC BLOCKING AGENTS AND AMPHETAMINE OR APOMORPHINE INDUCED STEREOTYPED BEHAVIOR IN RATS. 123937 02-04

- THE EFFECTS OF SOME BETA ADRENERGIC BLOCKING AGENTS ON THE CENTRAL AND PERIPHERAL ACTIONS OF TREMORINE AND OXOTREMORINE. 132759 02-03

- BLOCKING H3-NOREPINEPHRINE UPTAKE AND SOME GUANETHIDINE INDUCED EFFECTS WITH TRICYCLIC PSYCHOTHERAPEUTIC DRUGS. 133182 02-03

## BLOCKS

- EVIDENCE THAT METHADONE BLOCKS DOPAMINE RECEPTORS IN THE BRAIN. 122284 02-03

## BLOOD

- CENTRAL NERVOUS SYSTEM MECHANISMS RESPONSIBLE FOR BLOOD PRESSURE ELEVATION INDUCED BY P-CHLOROPHENYLALANINE. 119161 02-03

- EFFECT OF PRETREATMENT WITH SPIRONOLACTONE, PHENOBARBITAL OR BETA-DIETHYLAMINOETHYL DIPHENYLPROPYL-ACETATE (SKF-525-A) ON TRITIUM LEVELS IN BLOOD, HEART AND LIVER OF RATS AT VARIOUS TIMES AFTER ADMINISTRATION OF 3H-DIGITOXIN. 121243 02-03

- VARIATIONS IN BLOOD AND URINARY ELECTROLYTES IN THE COURSE OF TREATMENT WITH LITHIUM SALTS. 122313 02-13
- BLOOD LEVELS OF ANTIEPILEPTIC DRUGS - CHEMICAL DETERMINATION OF ANTIEPILEPTIC DRUGS IN BODY FLUIDS. 129211 02-06
- DELTA9-TETRAHYDROCANNABINOL: TEMPORAL CORRELATION OF THE PSYCHOLOGIC EFFECTS AND BLOOD LEVELS AFTER VARIOUS ROUTES OF ADMINISTRATION. 131610 02-14
- BEHAVIOR OF BIOPHYSICAL BLOOD PROPERTIES IN CHILDREN WITH MENTAL DISORDERS RECEIVING CHLORPROMAZINE TREATMENT. 133076 02-03
- TEMPERATURE INCREASES AND BLOOD PROTEIN CHANGES WITH NEUROLEPTICS: WITH SPECIAL CONSIDERATION OF THE NEW DIBENZODIAZEPINE DERIVATIVE, CLOZAPINE. 133350 02-15
- THE ELECTRIC INTERPHASIC BLOOD POTENTIAL FOR SODIUM AND POTASSIUM IONS IN PATIENTS TREATED WITH CHLORPROMAZINE FOR VARIOUS MENTAL DISORDERS. 133463 02-13
- BODY**
- A PIMOZIDE SENSITIVE EFFECT OF APOMORPHINE ON BODY TEMPERATURE OF THE RABBIT. 119050 02-03
- CENTRAL ACTIONS OF 6-HYDROXYDOPAMINE AND OTHER PHENYLETHYLAMINE DERIVATIVES ON BODY TEMPERATURE IN THE RAT. 120362 02-03
- MIND AND BODY IN BIOLOGICAL PSYCHIATRY. 127517 02-14
- BLOOD LEVELS OF ANTIEPILEPTIC DRUGS - CHEMICAL DETERMINATION OF ANTIEPILEPTIC DRUGS IN BODY FLUIDS. 129211 02-06
- BEHAVIORAL CONTROL OF DRUG METABOLISM AND BODY TEMPERATURE: BIOCHEMICAL AND PHYSIOLOGICAL CORRELATES. (PH.D. DISSERTATION). 130761 02-03
- DEVELOPMENT OF METHODOLOGY FOR ASSAY OF CANNABINOIDS IN BODY FLUIDS AND TISSUES. (UNPUBLISHED PAPER). 132370 02-06
- BOJER-CONVOLVULACEAE**
- PHYSIOLOGICAL DISPOSITION OF ISOERGINE (FROM ARGYREIA-NERVOSA (BURM. F.) BOJER-CONVOLVULACEAE) AND ITS EFFECT ON THE CONDITIONED AVOIDANCE RESPONSE IN RATS. 120012 02-03
- BOL**
- EFFECT OF BOL ON THE LSD INDUCED ALTERATION OF FLICKER DISCRIMINATION. 133655 02-04
- SOUND**
- PHENOBARBITAL MEDIATED INCREASE IN RING AND N-HYDROXYLATION OF THE CARCINOGEN N-2-FLUORENYLACETAMIDE, AND DECREASE IN AMOUNTS BOUND TO LIVER DEOXYRIBONUCLEIC ACID. 121265 02-03
- BOVINE**
- FURTHER CHARACTERIZATION OF A REDUCED NICOTINAMIDE ADENINE DINUCLEOTIDE PHOSPHATE DEPENDENT ALDEHYDE REDUCTASE FROM BOVINE BRAIN: INHIBITION BY PHENOTHIAZINE DERIVATIVES. 121634 02-03
- BRAIN**
- EFFECTS OF CHLORPROMAZINE FREE RADICAL ON BRAIN AND MICROSOMAL ENZYMES. 118913 02-03
- EFFECTS OF MORPHINE AND CALCIUM ON RESPIRATION OF RAT BRAIN SLICES. 118999 02-03
- EFFECT OF MORPHINE ON TYROSINE HYDROXYLASE ACTIVITY IN MOUSE BRAIN. 119033 02-03
- COMPARISON OF THE DOSE-RESPONSE EFFECTS OF MORPHINE ON BRAIN AMINES, ANALGESIA AND ACTIVITY IN MICE. 119037 02-03
- SEROTONIN SYNTHESIS WITH RAT BRAIN SYNAPTOSOMES: EFFECTS OF SEROTONIN AND MONOAMINE OXIDASE INHIBITORS. 119055 02-03
- EFFECT OF FOUR AMPHETAMINES ON BRAIN BIOGENIC AMINES AND THEIR METABOLITES. 119057 02-03
- BRAIN CONCENTRATIONS OF LORAZEPAM AND OXAZEPAM AT EQUAL DEGREE OF ANTICONVULSANT ACTIVITY. 119302 02-03
- EFFECT OF RESERPINE ON THE TRANSPORT OF 5-HYDROXYTRYPTAMINE TO THE RAT BRAIN. 119305 02-03
- SPECIES DIFFERENCE IN THE LOWERING OF BRAIN 5-HYDROXYTRYPTAMINE BY M-CHLOROAMPHETAMINE. 119306 02-03
- ACTIVE AVOIDANCE CONDITIONING: EFFECTS OF D-DEPRIVATION (DESYNCHRONIZED SLEEP DEPRIVATION) AND OF ALTERED BRAIN CATECHOLAMINES. 119832 02-03
- DRUG-INDUCED ALTERATIONS IN THE ACTIVITY OF RAT BRAIN CHOLINERGIC ENZYMES: I. IN VITRO AND IN VIVO EFFECT OF AMPHETAMINE. 120230 02-03
- BEHAVIORAL AND BIOCHEMICAL EFFECTS OF PREFERENTIALLY PROTECTING MONOAMINES IN THE BRAIN AGAINST THE ACTION OF RESERPINE. 120231 02-03
- EFFECT OF CENTRAL STIMULANTS AND DEPRESSANTS ON MOUSE BRAIN ACETYLCHOLINE AND CHOLINE LEVELS. 120232 02-03
- HARMINE TREMOR AFTER BRAIN MONOAMINE OXIDASE INHIBITION IN THE MOUSE. 120236 02-03
- STERIC REQUIREMENTS FOR CATECHOLAMINE UPTAKE BY RAT BRAIN SYNAPTOSOMES: STUDIES WITH RIGID ANALOGS OF AMPHETAMINE. 120357 02-03
- MORPHINE INDUCED INCREASES IN THE INCORPORATION OF 14C-TYROSINE INTO 14C-DOPAMINE AND 14C-NOREPINEPHRINE IN THE MOUSE BRAIN: ANTAGONISM BY NALOXONE AND TOLERANCE. 120358 02-03
- THE EFFECTS OF CHRONIC IMIPRAMINE ADMINISTRATION ON RAT BRAIN LEVELS OF SEROTONIN, 5-HYDROXYINDOLEACETIC ACID, NOREPINEPHRINE AND DOPAMINE. 120359 02-03
- RESERPINE INDUCED ALTERATIONS IN BRAIN AMINES AND THEIR RELATIONSHIP TO CHANGES IN THE INCIDENCE OF MINIMAL ELECTROSHOCK SEIZURES IN MICE. 120360 02-03
- REGIONAL RELEASE OF AROMATIC AMINES FROM TISSUES OF THE RAT BRAIN IN VITRO. 120524 02-03
- BRAIN SEROTONIN AND NOREPINEPHRINE AFTER CONVULSIONS AND RESERPINE. 120526 02-03
- THE EFFECTS OF SOME DRUGS AFFECTING BRAIN 5-HT ON THE AGGRESSIVE BEHAVIOR AND SPONTANEOUS ELECTRICAL ACTIVITY OF THE CENTRAL NERVOUS SYSTEM OF THE ANT, FORMICA-RUFA. 120812 02-04
- CHEMICALLY INDUCED DEGENERATION OF INDOLEAMINE - CONTAINING NERVE TERMINALS IN RAT BRAIN. 120813 02-03
- AMPHETAMINE ANALOGS AND BRAIN AMINES. 120832 02-03
- HUMAN BRAIN MONOAMINE OXIDASE: MULTIPLE FORMS AND SELECTIVE INHIBITORS. 120939 02-13
- EFFECTS OF L-DOPA ON THE EEG AND BRAIN AMINES OF UNRESTRAINED RATS. 121063 02-03
- DYNAMICS OF THE REGULATION OF HISTAMINE LEVELS IN MOUSE BRAIN. 121072 02-03
- BENZODIAZEPINES: ANXIETY REDUCING ACTIVITY BY REDUCTION OF SEROTONIN TURNOVER IN THE BRAIN. 121174 02-03
- DRUG DISPOSITION AS A FACTOR IN THE LOWERING OF BRAIN SEROTONIN BY CHLOROAMPHETAMINES IN THE RAT. 121204 02-03
- EFFECTS OF ANESTHETICS ON SODIUM UPTAKE INTO RAT BRAIN CORTEX IN VITRO. 121210 02-03
- UPTAKE AND UTILIZATION OF 3H-5-HYDROXYTRYPTOPHAN BY BRAIN TISSUE DURING DEVELOPMENT. 121278 02-03
- THE EFFECTS OF SOME TRYPTAMINE DERIVATIVES ON BRAIN MONOAMINES AND THEIR PRECURSOR AMINO ACIDS. 121279 02-03
- STUDIES ON THE PARADOXICAL INTERACTION OF PHYSOSTIGMINE AND PENTOBARBITAL ON REGIONAL BRAIN ACETYLCHOLINE CONTENT OF VARIOUS ANIMAL SPECIES. 121296 02-03
- PSYCHOACTIVE DRUGS AND BRAIN NEUROCHEMICAL TRANSMITTERS. 121299 02-13
- SOME EFFECTS OF THE HALLUCINOGENIC DRUG 2,5 DIMETHOXY-4-METHYLAMPHETAMINE ON THE METABOLISM OF BIOGENIC AMINES IN THE RAT BRAIN. 121305 02-03
- NARCOTIC DRUGS: EFFECTS ON THE SEROTONIN BIOSYNTHETIC SYSTEMS OF THE BRAIN. 121320 02-03
- BRAIN MICROSOMAL PROTEIN KINASE IN THE CHRONICALLY MORPHINIZED RAT. 121355 02-03



## Subject Index

- FURTHER CHARACTERIZATION OF A REDUCED NICOTINAMIDE ADENINE DINUCLEOTIDE PHOSPHATE DEPENDENT ALDEHYDE REDUCTASE FROM BOVINE BRAIN: INHIBITION BY PHENOTHIAZINE DERIVATIVES. 121634 02-03
- EFFECTS OF SOME ANALGESICS AND ANTIDEPRESSANTS ON THE NA- AND K- ADENOSINE TRIPHOSPHATASE FROM CORTICES OF BRAIN AND KIDNEY. 121668 02-13
- EFFECT OF AMINAZINE AND IMISINE ON METABOLISM OF DICARBOXYLIC AMINO ACIDS AND THEIR DERIVATIVES (GLUTAMINE AND GAMMA-AMINOBUTYRIC ACID) IN CAT BRAIN. 121876 02-03
- EFFECT OF MELIPRAMINE ON CARBOHYDRATE METABOLISM IN RABBIT BRAIN. 121877 02-03
- EFFECT OF MELIPRAMINE ON CARBOHYDRATE AND MONOAMINE METABOLISM IN BRAIN OF RESERPINIZED RATS. 121878 02-03
- THE EFFECT OF THE NEURONAL EXCITANT N-METHYL-D-ASPARTATE ON THE METABOLISM OF MOUSE BRAIN AMINO ACIDS LABELLED FROM (14C)BICARBONATE AND L-(U-14C)ASPARTATE. 121965 02-03
- SYMPOSIUM: BEHAVIOR MODIFICATION BY DRUGS. II. PSYCHOLOGICAL EFFECTS OF STIMULANT DRUGS IN CHILDREN WITH MINIMAL BRAIN DYSFUNCTION. 121989 02-14
- TIME DEPENDENT CHANGES IN BRAIN 3H-NOREPINEPHRINE DISAPPEARANCE CAUSED BY L-DOPA ADMINISTRATION. 122170 02-03
- ROLE OF BRAIN AMINES IN LEARNING ASSOCIATED WITH AMPHETAMINE STATE. 122201 02-04
- CHOLINERGIC AND ADRENERGIC EFFECTS OF ATROPINE AND PHYSOSTIGMINE ON BRAIN CHEMISTRY AND LEARNED BEHAVIOR. 122228 02-04
- THE EFFECTS OF SELECTIVE LESIONING OF BRAIN SEROTONIN OR CATECHOLAMINE CONTAINING NEURONES ON THE ANORECTIC ACTIVITY OF FENFLURAMINE AND AMPHETAMINE. 122243 02-03
- INHIBITORY EFFECTS OF CHRONIC ADMINISTRATION OF MORPHINE ON URIDINE AND THYMIDINE INCORPORATING ABILITIES OF MOUSE LIVER AND BRAIN SUBCELLULAR FRACTIONS. 122245 02-03
- EVIDENCE THAT METHADONE BLOCKS DOPAMINE RECEPTORS IN THE BRAIN. 122284 02-03
- CALCIUM EFFLUX AND RESPIRATORY INHIBITION IN BRAIN MITOCHONDRIA: EFFECTS OF CHLORPROMAZINE METABOLITES. 122535 02-03
- CATECHOLAMINES IN THE BRAIN AS MEDIATORS OF AMPHETAMINE PSYCHOSIS. 122659 02-13
- BRAIN AMINO ACIDS AS AFFECTED BY ACUTE AND CHRONIC ADMINISTRATION OF CHLORPROMAZINE. 122989 02-03
- ACTIVATION OF BRAIN SUCCINATE DEHYDROGENASE BY LITHIUM. 123663 02-03
- ALTERED METABOLISM OF SEROTONIN IN THE BRAIN OF THE RAT AFTER CHRONIC INGESTION OF D-AMPHETAMINE. 123938 02-03
- SOME ACTIONS OF PENTAZOCINE ON BEHAVIOR AND BRAIN MONOAMINES IN THE RAT. 124333 02-03
- ACETYLCHOLINE LEVEL IN BRAIN STRUCTURES OF RATS FOLLOWING ADMINISTRATION OF LYSERGIC ACID DIETHYLAMIDE. 125256 02-03
- EFFECT OF THE IMIPRAMINE GROUP OF ANTIDEPRESSANTS ON THE SEROTONIN LEVEL AND ACTIVITY OF 5-OXYTRYPTOPHANDECARBOXYLASE IN THE BRAIN OF ALBINO RATS. 125260 02-03
- THE NORMAL OCCURRENCE OF TRYPTAMINE IN BRAIN AND ITS CONVERSION TO N-METHYL AND N-DIMETHYLTRYPTAMINE IN VITRO AND IN VIVO. (UNPUBLISHED PAPER). 126244 02-03
- METHAMPHETAMINE, FENFLURAMINE AND THEIR METABOLITES: IDENTIFICATION AND SUBCELLULAR LOCALIZATION IN RAT BRAIN HOMOGENATES. (UNPUBLISHED PAPER). 126248 02-01
- 14C-CATECHOLAMINE SYNTHESIS IN MOUSE BRAIN DURING MORPHINE WITHDRAWAL. 127206 02-05
- RELEASE OF BRAIN DOPAMINE AS THE PROBABLE MECHANISM FOR THE HYPOTHERMIC EFFECT OF D-AMPHETAMINE. 128353 02-03
- ACUTE BRAIN SYNDROME ASSOCIATED WITH LITHIUM THERAPY. 129509 02-15
- BRAIN AMINES AND BARBITURATE ADDICTION. 130644 02-03

## Psychopharmacology Abstracts

- PHARMACOLOGICAL IMPLICATIONS OF THE CHANGES OF BRAIN MONOAMINE TURNOVER RATES ELICITED BY (.) AMPHETAMINE AND SOME CHEMICALLY RELATED COMPOUNDS. (UNPUBLISHED PAPER). 132368 02-03
- DILANTIN, BRAIN ELECTROLYTES, THE SO-CALLED SODIUM PUMP AND SEIZURES. 132528 02-03
- FRACTIONATION BY ZONAL CENTRIFUGATION OF BRAIN OF NORMAL RATS AND RATS TREATED WITH MORPHINE. 132642 02-03
- ANTAGONISM OF PENTYLENETETRAZOL EXCITATION BY ANTICONVULSANTS ON SINGLE BRAIN STEM NEURONS. 132676 02-03
- ETHANOL PREFERENCE IN THE RAT: INTERACTIONS BETWEEN BRAIN SEROTONIN AND ETHANOL, ACETALDEHYDE, PARALDEHYDE, 5-HTP AND 5-HTOL. 132682 02-04
- BRAIN STEM SEROTONIN DEPLETION AND PONTO-GENICULO-OCCIPITAL WAVE ACTIVITY IN THE CAT TREATED WITH RESERPINE. 132684 02-03
- EFFECTS OF ANTIHISTAMINIC AGENTS UPON THE ELECTROGRAPHIC ACTIVITY OF THE CAT BRAIN: A POWER SPECTRAL DENSITY STUDY. 132686 02-03
- CHOLINERGIC EFFECTS ON ADRENERGIC NEUROTRANSMITTERS IN RABBIT BRAIN PARTS. 132690 02-03
- INTERACTION BETWEEN CHOLINERGIC AND CATECHOLAMINERGIC NEURONES IN RAT BRAIN. 132703 02-03
- SPECIFICITY OF THE EFFECT OF LITHIUM INJECTIONS ON THE ENTRY OF CARBON ATOMS OF GLUCOSE INTO MOUSE BRAIN IN VIVO. 132777 02-03
- THE EFFECT OF BENZODIAZEPINES ON BRAIN AMINES OF THE MOUSE. 132779 02-03
- ULTRASTRUCTURAL CHANGES IN ISOLATED RAT BRAIN MITOCHONDRIA. 133048 02-03
- STUDIES ON THE ACCUMULATION OF O-METHYLATED DOPAMINE AND NORADRENALINE IN THE RAT BRAIN FOLLOWING VARIOUS NEUROLEPTICS, THYMOLEPTICS AND ACEPERONE. 133129 02-03
- PSYCHOTROPIC DRUG INFLUENCES ON BRAIN ACETYLCHOLINE UTILIZATION. 133474 02-03
- HISTOENZYMOLGIC STUDIES OF THE BRAIN TISSUES AND INTERNAL ORGANS OF EXPERIMENTAL ANIMALS IN A SINGULAR ADMINISTRATION OF LSD-25. 133505 02-03
- RELATIONSHIP BETWEEN HYPOTHERMIA AND SOME CHLORPROMAZINE INDUCED METABOLIC CHANGES IN MOUSE BRAIN. 133526 02-03
- PHENETHYLAMINE AS A NEUROHUMORAL AGENT IN BRAIN. 133622 02-03
- BRAIN BIOCHEMICAL CHANGES IN RATS TREATED WITH CHLORPROMAZINE AND ELECTROSHOCKED DURING EARLY POSTNATAL DEVELOPMENT. 133708 02-03
- CYClic-AMP IN BRAIN AREAS: EFFECTS OF AMPHETAMINE AND NOREPINEPHRINE ASSESSED THROUGH THE USE OF MICROWAVE RADIATION AS A MEANS OF TISSUE FIXATION. 133713 02-03
- THE EFFECTS OF ENVIRONMENTAL ISOLATION ON BEHAVIOR AND REGIONAL RAT BRAIN TYROSINE HYDROXYLASE AND TRYPTOPHAN HYDROXYLASE ACTIVITIES. 133715 02-03
- INTRACELLULAR LOCALIZATION AND CO-FACTOR REQUIREMENT OF AMPHETAMINE TETRAZOLIUM REDUCTASE OF GUINEA-PIG BRAIN. 133763 02-03
- CHANGES IN THE NEURONS OF CERTAIN SECTIONS OF THE RAT BRAIN DURING MOTOR STIMULATION INDUCED BY PHENAMINE. 133958 02-03
- EFFECT OF MELIPRAMINE ON THE SEROTONIN CONTENT IN THE BRAIN OF RESERPINIZED RATS. 133961 02-03
- BRAINS**
- DELTA9-TETRAHYDROCANNABINOL AND ITS METABOLITES IN MONKEY BRAINS. 121318 02-03
- BRAINSTEM**
- THE EFFECTS OF METHYLATED TRYPTAMINE DERIVATIVES ON BRAINSTEM NEURONES. 121307 02-12
- BREAKDOWN**
- LOCAL SYNTHESIS AND BREAKDOWN OF NORADRENALINE IN CONSTRICTED RAT SCIATIC NERVES. 122574 02-03

- BRED**  
EFFECTS OF INTERTRIAL CROSSING PUNISHMENT AND D-AMPHETAMINE SULFATE ON AVOIDANCE AND ACTIVITY IN FOUR SELECTIVELY BRED RAT STRAINS. 131293 02-04
- BROMAZEPAM**  
AN URINARY METABOLITE OF BROMAZEPAM. 133523 02-01
- BROMIDE**  
BROMIDE INTOXICATION. 133240 02-15  
CENTRAL AND PERIPHERAL ACTIONS OF THE ACETYLCHOLINE ANTAGONIST, AMBUTONIUM BROMIDE. 133299 02-03
- BROMINATION**  
BROMINATION OF PHENOTHIAZINE TRANQUILIZERS: A METHOD FOR SENSITIVE AND SPECIFIC DETECTION. 119053 02-06
- BRONCHITIS**  
EFFECT OF NITRAZEPAM IN CHRONIC OBSTRUCTIVE BRONCHITIS. 133719 02-15
- BUFOTENINE**  
XYLAMIDINE TOSYLATE: DIFFERENTIAL ANTAGONISM OF THE HYPOTHERMIC EFFECTS OF N,N DIMETHYLTRYPTAMINE, BUFOTENINE, AND 5-METHOXYTRYPTAMINE. 133528 02-03
- BULB**  
EFFECTS OF PSYCHOTROPIC DRUGS ON EMOTIONAL BEHAVIOR IN RATS WITH LIMBIC LESIONS, WITH SPECIAL REFERENCE TO OLFACTORY BULB ABLATIONS. 128458 02-04  
THE EFFECTS OF ANESTHETICS ON SYNAPTIC EXCITATION AND INHIBITION IN THE OLFACTORY BULB. (UNPUBLISHED PAPER). 132508 02-03
- BUTABARBITAL**  
COMPARISON OF CARISOPRODOL, BUTABARBITAL, AND PLACEBO IN TREATMENT OF THE LOW BACK SYNDROME. 132713 02-11
- BUTISOL**  
BUTISOL SODIUM VS. LIBRIUM AMONG GERIATRIC AND YOUNGER OUTPATIENTS AND NURSING HOME PATIENTS. 123885 02-10
- BUTRIPTYLINE**  
THE ACTION OF IMIPRAMINE, AMITRIPTYLINE, DOXEPIN AND BUTRIPTYLINE IN AN OPERANT CONDITIONING SCHEDULE. 120014 02-04
- BUTYRAMIDE**  
CENTRAL ACETYLCHOLINERGIC ACTIVITY OF: 2,2 DIPHENYL 4-(3-AZABICYCLONON-3-YL) BUTYRAMIDE HYDROCHLORIDE (SC-13639). 133303 02-02
- BUTYROPHENONE**  
IMPORTANCE OF ADEQUATE DOSAGE DETERMINATION OF DRUG EFFICACY: TRIAL OF A NEW BUTYROPHENONE COMPOUND ON ACUTE SCHIZOPHRENICS. 133263 02-07  
NEW DYSTONIC SYNDROME ASSOCIATED WITH BUTYROPHENONE THERAPY. 133516 02-15
- CACTUS**  
PEYOTE ALKALOIDS: IDENTIFICATION IN THE MEXICAN CACTUS PELECYPHORA ASELLIFORMIS EHRENBERG. 132873 02-01
- CAIMAN-SCLEROPS**  
THE EEG AND BEHAVIORAL CONTINUUM OF THE CROCODILIAN CAIMAN-SCLEROPS. 2. EEG AND EMG SPIKE ACTIVITY. 124225 02-03
- CALCIUM**  
EFFECTS OF MORPHINE AND CALCIUM ON RESPIRATION OF RAT BRAIN SLICES. 118999 02-03  
INCREASED CALCIUM AND MAGNESIUM EXCRETION INDUCED BY LITHIUM CARBONATE. 119983 02-03  
THE EFFECT OF PHENOBARBITAL ON INTESTINAL CALCIUM TRANSPORT. 121286 02-05  
ALTERED CALCIUM METABOLISM DUE TO ANTICONVULSANT DRUGS. 122019 02-11  
THE EFFECT OF CALCIUM AND MAGNESIUM IONS ON DRUG RECEPTOR INTERACTIONS. 122239 02-03  
CALCIUM EFFLUX AND RESPIRATORY INHIBITION IN BRAIN MITOCHONDRIA: EFFECTS OF CHLORPROMAZINE METABOLITES. 122535 02-03  
EFFECT OF DRUGS ON THE CALCIUM EXCHANGEABILITY IN THE PINEAL GLAND. 133751 02-03
- CANNABIDIOL**  
A METABOLIC INTERACTION IN VIVO BETWEEN CANNABIDIOL AND DELTA1-TETRAHYDROCANNABINOL. 133741 02-03
- CANNABINOIDS**  
SPECTRAL INTERACTIONS OF MARIHUANA CONSTITUENTS (CANNABINOIDS) WITH RAT LIVER MICROSOMAL MONOOXYGENASE SYSTEM. 122097 02-03  
DEVELOPMENT OF METHODOLOGY FOR ASSAY OF CANNABINOIDS IN BODY FLUIDS AND TISSUES. (UNPUBLISHED PAPER). 132370 02-06  
TOXICOLOGY IN CANNABINOIDS. (UNPUBLISHED PAPER). 132372 02-15
- CANNABIS**  
ENHANCED ACTIVITY OF BENZPYRENE HYDROXYLASE IN RAT LIVER AND LUNG AFTER ACUTE CANNABIS ADMINISTRATION. 122244 02-03
- CAPACITY**  
SEDALIMUM IN PSYCHIATRY IN ITS CAPACITY AS TRANQUILIZER AND NEUROLEPTIC. 133173 02-07
- CARBACHOL**  
CENTRAL BLOCKADE OF (METHYL)ATROPINE ON CARBACHOL DRINKING: A DOSE-RESPONSE STUDY. 121380 02-04
- CARBAMAZEPINE**  
FOLLOWUP RESULTS OVER AN INTERVAL OF 9 YEARS WITH CARBAMAZEPINE THERAPY IN EPILEPSY. 133207 02-11
- CARBAMYLCHOLINE**  
EFFECT OF INTRACEREBRAL INJECTIONS OF CARBAMYLCHOLINE AND ACETYLCHOLINE ON TEMPERATURE REGULATION IN THE CAT. 120811 02-03
- CARBARYL**  
EFFECT OF CARBARYL (1-NAPHTHYL-N-METHYLCARBAMATE) ON PENTOBARBITAL INDUCED SLEEPING TIME AND SOME LIVER MICROSOMAL ENZYMES IN WHITE LEGHORN COCKERELS. 121836 02-03
- CARBOHYDRATE**  
ALTERED CARBOHYDRATE METABOLISM DURING TREATMENT WITH LITHIUM CARBONATE. 120754 02-13  
EFFECT OF MELIPRAMINE ON CARBOHYDRATE METABOLISM IN RABBIT BRAIN. 121877 02-03  
EFFECT OF MELIPRAMINE ON CARBOHYDRATE AND MONOAMINE METABOLISM IN BRAIN OF RESERPINIZED RATS. 121878 02-03  
CHLORPROMAZINE INDUCED ALTERNATIONS OF CARBOHYDRATE METABOLISM: EFFECT OF CHLORPROMAZINE PRETREATMENT ON THE INSULIN RESPONSE TO GLUCOSE AND TOLBUTAMIDE IN THE ADRENALECTOMIZED RAT. (PH.D. DISSERTATION). 130182 02-03
- CARBON**  
RELATION BETWEEN DRUG METABOLIZING ACTIVITY AND PHOSPHOLIPIDS IN HEPATIC MICROSOMES. I. EFFECTS OF PHENOBARBITAL, CARBON TETRACHLORIDE, AND ACTINOMYCIN-D. 119001 02-03  
CARBON MONOXIDE INDUCED PARKINSONISM. 122172 02-11  
SPECIFICITY OF THE EFFECT OF LITHIUM INJECTIONS ON THE ENTRY OF CARBON ATOMS OF GLUCOSE INTO MOUSE BRAIN IN VIVO. 132777 02-03
- CARBONATE**  
INCREASED CALCIUM AND MAGNESIUM EXCRETION INDUCED BY LITHIUM CARBONATE. 119983 02-03  
ALTERED CARBOHYDRATE METABOLISM DURING TREATMENT WITH LITHIUM CARBONATE. 120754 02-13  
TWO CASES OF SEVERE LITHIUM CARBONATE POISONING. 122314 02-15  
PROPHYLACTIC TREATMENT OF MANIC-DEPRESSIVE PSYCHOSIS BY LITHIUM CARBONATE: THEORETICAL AND PRACTICAL CONCERN OF VARIATIONS IN PLASMA CONCENTRATION. 122316 02-13  
A COMPARISON OF LITHIUM CARBONATE AND CHLORPROMAZINE IN THE TREATMENT OF EXCITED SCHIZO-AFFECTIVES. 122662 02-08  
COMMENTS ON TREATMENT: LITHIUM CARBONATE IN MANIC-DEPRESSIVE ILLNESS. 123351 02-09  
LITHIUM CARBONATE IN EMOTIONALLY UNSTABLE CHARACTER DISORDER. 126232 02-09  
TARGET SYMPTOMS IN LITHIUM CARBONATE THERAPY. 127854 02-08

## Subject Index

- LITHIUM CARBONATE PROPHYLAXIS IN AFFECTIVE DISORDERS. (CLINICAL VERSUS RESEARCH APPLICATIONS). 127880 02-09
- MANIA AS A MESSAGE: TREATMENT WITH FAMILY THERAPY AND LITHIUM CARBONATE. 130388 02-09
- THE USE OF LITHIUM CARBONATE. 133625 02-13
- THE RELATIONSHIP OF LITHIUM CARBONATE TO PSORIASIS. 134327 02-05
- CARBOXAMIDE**
- SOME BENZOFURAN CARBOXAMIDE DERIVATIVES WITH NARCOTIC AND ANALGESIC ACTIVITY. 133216 02-02
- CARCINOGEN**
- PHENOBARBITAL MEDIATED INCREASE IN RING AND N-HYDROXYLATION OF THE CARCINOGEN N-2-FLUORENYLACETAMIDE, AND DECREASE IN AMOUNTS BOUND TO LIVER DEOXYRIBONUCLEIC ACID. 121265 02-03
- CARDIAC**
- SUPPRESSION BY CLONIDINE (ST-155) OF CARDIAC ARRHYTHMIAS INDUCED BY DIGITALIS. 122181 02-03
- CARDIOTHORACIC**
- INAPPROPRIATE RESPONSE OF DRUG ADDICTS TO CARDIOTHORACIC SURGERY. 119039 02-15
- CARDIOVASCULAR**
- EFFECTS OF PROPRANOLOL, PHENTOLAMINE AND METHYL ATROPINE ON CARDIOVASCULAR FUNCTION IN THE SQUIRREL MONKEY DURING BEHAVIORAL EXPERIMENTS. 122179 02-03
- CERTAIN OBSERVATIONS ON INTERRELATIONSHIPS BETWEEN RESPIRATORY AND CARDIOVASCULAR EFFECTS OF (-) DELTA9-TRANS-TETRAHYDROCANNABINOL. 122394 02-05
- THE EFFECTS OF CHRONIC ADMINISTRATION OF TRANS-DELTA9-TETRAHYDROCANNABINOL ON BEHAVIOR AND THE CARDIOVASCULAR SYSTEM OF DOGS. 132719 02-03
- MARIJUANA SMOKING: CARDIOVASCULAR EFFECTS IN MAN AND POSSIBLE MECHANISMS. 133055 02-13
- CARDIOVASCULAR EFFECTS OF VERONAMINE. 133215 02-03
- PHARMACOLOGICAL STUDIES OF NEW INDOLE ALKALOIDS, RUGULOVASINE A AND B HYDROCHLORIDE: EFFECTS OF BOTH ALKALOIDS ON CARDIOVASCULAR AND CENTRAL NERVOUS SYSTEM, AND SMOOTH MUSCLES. 133217 02-02
- EFFECTS OF ADRENERGIC BLOCKADE ON CARDIOVASCULAR RESPONSES TO ETHANOL AND ACETALDEHYDE. 133301 02-03
- CARE**
- MEDICAL CARE OF PSYCHOTROPIC DRUG PROBLEM PATIENTS OUTSIDE HOSPITAL. 125278 02-17
- CARISOPRODOL**
- COMPARISON OF CARISOPRODOL, BUTABARBITAL, AND PLACEBO IN TREATMENT OF THE LOW BACK SYNDROME. 132713 02-11
- CASE**
- A DRUG-INDUCED CEREBRAL REACTION: A CASE OF MYOCLONIC STATUS UNDER TREATMENT WITH TRICYCLIC ANTIDEPRESSIVES. 122340 02-15
- A FATAL CASE INVOLVING METHYLENEDIOXYAMPHETAMINE. 122440 02-15
- PSYCHIATRIC AND BIOCHEMICAL PROFILES OF LITHIUM THERAPY IN MANIA. (CASE REPORT). 130547 02-09
- NOTES ON A CASE OF TICS (GILLES-DE-LA-TOURETTES SYNDROME) TREATED BY HALOPERIDOL. 133011 02-14
- REPORT ON A CASE OF STATUS-PSYCHOMOTRICUS WITH TONIC TWILIGHT ATTACKS IN DRUG OVERDOSE. 133331 02-15
- A CASE OF EARLY OXAZEPAM ADDICTION TREATED IN THE OUTPATIENT CLINIC. 133450 02-15
- CASTRATION**
- THE INFLUENCE OF ADRENALECTOMY, HYPOPHYSECTOMY, THYROIDECTOMY, CASTRATION, AND TESTOSTERONE ON APOMORPHINE INDUCED AGGRESSIVE BEHAVIOUR IN THE RAT. 120790 02-04
- CASUISTIC**
- CASUISTIC CONTRIBUTION TO THE PROBLEM OF COMPULSIVE LAUGHTER. 126994 02-13

## Psychopharmacology Abstracts

- CAT**
- RELATIONSHIP BETWEEN EXTRAOCULAR AND PGO ACTIVITY IN THE CAT. 119534 02-03
- INSOMNIA AND CEREBRAL METABOLISM OF SEROTONIN IN CAT: IN VITRO SYNTHESIS AND RELEASE OF SEROTONIN 18 H AFTER DESTRUCTION OF THE RAPHE NUCLEI. 119684 02-03
- SPINDLE-LIKE ACTIVITY IN THE CAT. 119835 02-17
- EFFECT OF INTRACEREBRAL INJECTIONS OF CARBAMYLCHOLINE AND ACETYLCHOLINE ON TEMPERATURE REGULATION IN THE CAT. 120811 02-03
- EFFECT OF AMINAZINE AND IMISINE ON METABOLISM OF DICARBOXYLIC AMINO ACIDS AND THEIR DERIVATIVES (GLUTAMINE AND GAMMA-AMINOBUTYRIC ACID) IN CAT BRAIN. 121876 02-03
- THE INDUCTION AND ANTAGONISM OF CENTRAL NERVOUS SYSTEM STIMULANT - INDUCED STEREOTYPED BEHAVIOR IN THE CAT. 122549 02-04
- THE NEUROPHYSIOLOGICAL EFFECTS OF AMPHETAMINE UPON THE CAT AMYGDALA. 127340 02-13
- BRAIN STEM SEROTONIN DEPLETION AND PONTO-GENICULO-OCCIPITAL WAVE ACTIVITY IN THE CAT TREATED WITH RESERPINE. 132684 02-03
- AN ANALYSIS OF THE EFFECT OF RESERPINE UPON PONTO-GENICULO-OCCIPITAL WAVE ACTIVITY IN THE CAT. 132685 02-03
- EFFECTS OF ANTIHISTAMINIC AGENTS UPON THE ELECTROGRAPHIC ACTIVITY OF THE CAT BRAIN: A POWER SPECTRAL DENSITY STUDY. 132686 02-03
- CATALEPSY**
- MORPHINE CATALEPSY IN THE RAT: RELATION TO STRIATAL DOPAMINE METABOLISM. 119032 02-03
- THE EFFECT OF AMANTADINE ON MOTOR ACTIVITY AND CATALEPSY IN RATS. 120017 02-04
- CATALEPTIC**
- THE CATALEPTIC STATE INDUCED BY KETAMINE: A REVIEW OF THE NEUROPHARMACOLOGY OF ANESTHESIA. 133743 02-03
- CATCHMENT**
- LITHIUM THERAPY FOR MANIC-DEPRESSIVES IN A LARGE, POOR, SPARSELY POPULATED CATCHMENT AREA. 119045 02-09
- CATECHOL**
- A 3-O-METHYLATED CATECHOL METABOLITE OF DIPHENYLHYDANTOIN (DILANTIN) IN RAT URINE. 122235 02-03
- CATECHOL-O-METHYLTRANSFERASE**
- INHIBITION OF CATECHOL-O-METHYLTRANSFERASE BY L-DOPA AND DECARBOXYLASE INHIBITORS. 119304 02-03
- CATECHOLAMINE**
- EFFECTS OF CATECHOLAMINE SYNTHESIS INHIBITION ON ETHANOL NARCOSIS IN MICE. 118988 02-03
- EFFECT OF 6-HYDROXYDOPAMINE ON CATECHOLAMINE CONCENTRATIONS AND BEHAVIOR IN THE MORPHINE TOLERANT RAT. 119048 02-04
- PHYSOSTIGMINE AND 1,1 DIMETHYL-4-PHENYLPIPERAZINIUM INDUCED PRESSOR RESPONSES AND CATECHOLAMINE RELEASE IN 6-HYDROXYDOPAMINE TREATED RATS. 120234 02-03
- STERIC REQUIREMENTS FOR CATECHOLAMINE UPTAKE BY RAT BRAIN SYNAPTOSOMES: STUDIES WITH RIGID ANALOGS OF AMPHETAMINE. 120357 02-03
- CATECHOLAMINE METABOLISM, DEPRESSIVE ILLNESS AND DRUG RESPONSE. 120992 02-13
- INHIBITION OF CATECHOLAMINE OXIDATION BY INDOLES. 121357 02-03
- INDUCTION OR REDUCTION OF CATECHOLAMINE ENZYMES: REGULATION OF CATECHOLAMINE TURNOVER BY VARIATIONS OF ENZYME LEVELS. 122222 02-03
- THE EFFECTS OF SELECTIVE LESIONING OF BRAIN SEROTONIN OR CATECHOLAMINE CONTAINING NEURONES ON THE ANORECTIC ACTIVITY OF FENFLURAMINE AND AMPHETAMINE. 122243 02-03
- CATECHOLAMINE METABOLISM IN AFFECTIVE DISORDERS - IV. PRELIMINARY STUDIES OF NOREPINEPHRINE METABOLISM IN DEPRESSED PATIENTS TREATED WITH AMITRIPTYLINE. 127215 02-09
- CATECHOLAMINE METABOLISM IN AFFECTIVE DISORDERS: A LONGITUDINAL STUDY OF A PATIENT TREATED WITH AMITRIPTYLINE AND ECT. 130109 02-09

- AMANTADINE AND CATECHOLAMINE UPTAKE. 133767 02-03
- CATECHOLAMINERGIC**  
INTERACTION BETWEEN CHOLINERGIC AND CATECHOLAMINERGIC NEURONES IN RAT BRAIN. 132703 02-03
- CATECHOLAMINES**  
ACTIVE AVOIDANCE CONDITIONING: EFFECTS OF D-DEPRIVATION (DESYNCHRONIZED SLEEP DEPRIVATION) AND OF ALTERED BRAIN CATECHOLAMINES. 119832 02-03  
DESYNCHRONIZED SLEEP DEPRIVATION: LEARNING DEFICIT AND ITS REVERSAL BY INCREASED CATECHOLAMINES. 121361 02-04  
CATECHOLAMINES IN THE BRAIN AS MEDIATORS OF AMPHETAMINE PSYCHOSIS. 122659 02-13  
THE SWITCH PROCESS IN MANIC-DEPRESSIVE ILLNESS. II. RELATIONSHIP TO CATECHOLAMINES, REM SLEEP, AND DRUGS. 122980 02-09  
CLINICAL PHARMACOLOGY OF 5-HYDROXYTRYPTAMINE AND CATECHOLAMINES VENOMOTOR RECEPTORS. 133749 02-13  
AMPHETAMINE PSYCHOSIS: A MODEL SCHIZOPHRENIA MEDIATED BY CATECHOLAMINES. 134118 02-15
- CATS**  
FURTHER STUDIES IN CATS CHRONICALLY TREATED WITH P-CHLOROPHENYLALANINE (PCPA). 119391 02-03  
ATHETOID AND CHOREIFORM HYPERKINESIAS PRODUCED BY CAUDATE APPLICATION OF DOPAMINE IN CATS. 122195 02-04  
THE ACTION OF SOME ANTICONVULSANT DRUGS ON COBALT INDUCED EPILEPSY AND ON THE BEMEGRIDE THRESHOLD IN ALERT CATS. 123631 02-03  
RESPIRATORY EFFECTS OF CHLORPROMAZINE IN UNANESTHETIZED DECEREBRATE CATS. 133292 02-03
- CAUDATE**  
ATHETOID AND CHOREIFORM HYPERKINESIAS PRODUCED BY CAUDATE APPLICATION OF DOPAMINE IN CATS. 122195 02-04  
A POSSIBLE CAUDATE CHOLINERGIC MECHANISM IN TWO INSTRUMENTAL CONDITIONED RESPONSES. 133471 02-04
- CAUDATE-PUTAMEN**  
ON THE INVOLVEMENT OF THE CAUDATE-PUTAMEN, GLOBUS-PALLIDUS AND SUBSTANTIA-NIGRA WITH NEUROLEPTIC AND CHOLINERGIC MODIFICATION OF LOCOMOTOR ACTIVITY. 121274 02-03
- CELL**  
EFFECTS OF DIPHENYLHYDANTOIN AND OTHER ANTIEPILEPTIC DRUGS ON EPILEPTIFORM ACTIVITY AND PURKINJE CELL DISCHARGE RATES. 123632 02-03  
AUGMENTATION OF CEREBELLAR PURKINJE CELL DISCHARGE RATE AFTER DIPHENYLHYDANTOIN. 123633 02-03  
EFFECTS OF MORPHINE AND ANTAGONISTS ON HYPOTHALAMIC CELL ACTIVITY. 133309 02-03
- CELLS**  
THE DENSITY AND ULTRASTRUCTURE OF THE PURKINJE CELLS FOLLOWING DIPHENYLHYDANTOIN TREATMENT IN ANIMALS AND MAN. 119002 02-03  
PRELIMINARY NOTE: CHANGES IN RNA CONTENT OF SYMPATHETIC GANGLION CELLS OF RESERPINE PRETREATED RATS. 121283 02-03  
TRANSFORMATION OF FISCHER RAT EMBRYO CELLS BY THE COMBINED ACTION OF MURINE LEUKEMIA VIRUS AND (-) TRANS-DELTA<sup>9</sup>-TETRAHYDROCANNABINOL. 121287 02-03  
ACTIVATION AND INHIBITION OF LIPOLYSIS IN ISOLATED FAT CELLS BY VARIOUS INHIBITORS OF CYCLIC-AMP PHOSPHODIESTERASE. 124170 02-03  
LACK OF TOXIC EFFECT OF GUANETHIDINE ON NERVE CELLS AND SMALL INTENSELY FLUORESCENT CELLS IN CULTURES OF SYMPATHETIC GANGLIA OF NEWBORN RATS. 132656 02-03
- CENTRAL**  
CENTRAL NERVOUS SYSTEM MECHANISMS RESPONSIBLE FOR BLOOD PRESSURE ELEVATION INDUCED BY P-CHLOROPHENYLALANINE. 119161 02-03  
EFFECT OF CENTRAL STIMULANTS AND DEPRESSANTS ON MOUSE BRAIN ACETYLCHOLINE AND CHOLINE LEVELS. 120232 02-03
- CENTRAL ACTIONS OF 6-HYDROXYDOPAMINE AND OTHER PHENYLETHYLAMINE DERIVATIVES ON BODY TEMPERATURE IN THE RAT. 120362 02-03  
THE EFFECTS OF SOME DRUGS AFFECTING BRAIN 5-HT ON THE AGGRESSIVE BEHAVIOR AND SPONTANEOUS ELECTRICAL ACTIVITY OF THE CENTRAL NERVOUS SYSTEM OF THE ANT, FORMICA-RIFA. 120812 02-04  
CENTRAL EFFECTS OF AMINES IN ADULT FOWLS. 121297 02-03  
CENTRAL BLOCKADE OF (METHYL)ATROPINE ON CARBACHOL DRINKING: A DOSE-RESPONSE STUDY. 121380 02-04  
EFFECTS OF HALOPERIDOL AND CHLORPROMAZINE ON CENTRAL ADRENERGIC AND CHOLINERGIC MECHANISMS IN RABBITS. 122026 02-04  
DEGENERATION OF CENTRAL NORADRENALINE NEURONS AFTER 6-HYDROXYDOPAMINE IN NEWBORN ANIMALS. 122225 02-03  
SYNERGISM BY ATROPINE OF CENTRAL STIMULANT PROPERTIES OF PHENYLPROPANOLAMINE. 122399 02-03  
THE CENTRAL HYPOTENSIVE ACTION OF AMPHETAMINE, EPHEDRINE, PHENTERMINE, CHLORPHENTERMINE AND FENFLURAMINE. 122446 02-03  
THE INDUCTION AND ANTAGONISM OF CENTRAL NERVOUS SYSTEM STIMULANT - INDUCED STEREOTYPED BEHAVIOR IN THE CAT. 122569 02-04  
CENTRAL EFFECTS OF ATROPINE UPON AVERSIVE CLASSICAL CONDITIONING IN RABBITS. 123934 02-04  
GASTRIC LESIONS INDUCED BY RESTRAINT AND COLD EXPOSURE: ARE CENTRAL ADRENERGIC MECHANISMS INVOLVED. (UNPUBLISHED PAPER). 129461 02-03  
STRUCTURE-ACTIVITY RELATIONSHIP OF 5-TRIAZOLOBENZODIAZEPINES IN CENTRAL NERVOUS DEPRESSANT ACTION. 130910 02-03  
PHARMACOLOGICAL STUDY OF HYDROGENATED RUGULOVASINE A AND B HYDROCHLORIDES: CENTRAL AND PERIPHERAL ACTIONS. 130912 02-03  
PHARMACODYNAMIC EFFECTS OF 8-CHLORO-6-PHENYL 4H-5-TRIAZOLOBENZODIAZEPINE (D-407A), A NEW CENTRAL DEPRESSANT. 131056 02-02  
GASTRIC LESIONS INDUCED BY RESTRAINT AND COLD EXPOSURE: A STUDY OF CENTRAL MONOAMINERGIC MECHANISM. (UNPUBLISHED PAPER). 132367 02-03  
THE EFFECTS OF SOME BETA ADRENERGIC BLOCKING AGENTS ON THE CENTRAL AND PERIPHERAL ACTIONS OF TREMORINE AND OXOTREMORINE. 132759 02-03  
CENTRAL ATROPINE-LIKE TOXICITY IN COMBINED PSYCHOTROPIC DRUG ADMINISTRATION. 133123 02-15  
PHARMACOLOGICAL STUDIES OF NEW INDOLE ALKALOIDS, RUGULOVASINE A AND B HYDROCHLORIDE: I.EFFECTS OF BOTH ALKALOIDS ON CARDIOVASCULAR AND CENTRAL NERVOUS SYSTEM, AND SMOOTH MUSCLES. 133217 02-02  
CENTRAL AND PERIPHERAL ACTIONS OF THE ACETYLCHOLINE ANTAGONIST, AMBUTONIUM BROMIDE. 133299 02-03  
CENTRAL ANTICHOLINERGIC ACTIVITY OF: 2,2 DIPHENYL 4-(3-AZABICYCLONON-3-YL) BUTYRAMIDE HYDROCHLORIDE (SC-13639). 133303 02-02
- CENTRALLY**  
THE INFLUENCE OF SOME CENTRALLY ACTING DRUGS ON SYMPATHETIC NERVE ACTIVITY. 121308 02-03  
ALTERATIONS BY CENTRALLY ACTING DRUGS OF THE SUPPRESSION OF SELF-STIMULATION BEHAVIOR IN THE RAT BY TETRABENAZINE, PHYSOSTIGMINE, CHLORPROMAZINE AND PENTOBARBITAL. 133473 02-04
- CENTRIFUGATION**  
FRACTIONATION BY ZONAL CENTRIFUGATION OF BRAIN OF NORMAL RATS AND RATS TREATED WITH MORPHINE. 132642 02-03
- CEPHALIC**  
THE EFFECT OF NEUROLEPTIC DRUGS ON CEPHALIC CIRCULATION IN ELDERLY PSYCHIATRIC PATIENTS. 133353 02-11
- CEREBELLAR**  
AUGMENTATION OF CEREBELLAR PURKINJE CELL DISCHARGE RATE AFTER DIPHENYLHYDANTOIN. 123633 02-03



## Subject Index

### CEREBRAL

- INSOMNIA AND CEREBRAL METABOLISM OF SEROTONIN IN CAT: IN VITRO SYNTHESIS AND RELEASE OF SEROTONIN 18 H AFTER DESTRUCTION OF THE RAPHE NUCLEI. 119684 02-03
- THE ONTOGENY OF 14C-DOPAMINE CLEARANCE FROM THE CEREBRAL VENTRICLES OF DEVELOPING RHESUS MONKEYS. 120218 02-03
- THE ACTION OF GAMMA-HYDROXYBUTYRIC ACID ON CEREBRAL GLUCOSE METABOLISM. 121074 02-02
- THE EFFECT OF MORPHINE ON PRIMARY SOMATOSENSORY EVOKED RESPONSES IN THE RAT CEREBRAL CORTEX. 121281 02-04
- P-CHLOROAMPHETAMINE - INHIBITION OF CEREBRAL TRYPTOPHAN HYDROXYLASE. 121354 02-03
- A DRUG-INDUCED CEREBRAL REACTION: A CASE OF MYOCLONIC STATUS UNDER TREATMENT WITH TRICYCLIC ANTIDEPRESSIVES. 122340 02-15
- THE EFFECTS OF PROPRANOLOL AND ELECTRICAL STIMULATION ON THE CYCLIC 3,5 AMP CONTENT OF ISOLATED CEREBRAL TISSUE. 122357 02-03
- PSYCHOPHARMACOLOGICAL AGENTS AND CEREBRAL EDEMA. 130019 02-15
- CEREBRAL DISTURBANCES IN PREGNANCY DUE TO ACUTE POISONING WITH STEMETIL. 133068 02-15
- CEREBRAL AND PERIPHERAL UTILIZATION OF L-DOPA IN PATIENTS WITH PARKINSONISM, DEPRESSIVE OR MANIC SYNDROMES UNDER L-DOPA PERFUSION WITH OR WITHOUT A DECARBOXYLASE INHIBITOR. 133175 02-13

### CEREBROSPINAL

- STEADY-STATE LEVELS OF PROBENECID AND THEIR RELATION TO ACID MONOAMINE METABOLITES IN HUMAN CEREBROSPINAL FLUID. 119985 02-03
- CEREBROSPINAL FLUID LEVELS OF MHPG IN AFFECTIVE DISORDERS. 124330 02-13
- THE EFFECT OF LITHIUM CHLORIDE ON THE ELECTROLYTE COMPOSITION OF CEREBROSPINAL FLUID OF THE RAT. 130355 02-03
- RELATIONSHIPS BETWEEN SERUM AND CEREBROSPINAL FLUID ANTICONVULSANT DRUG AND FOLIC ACID CONCENTRATIONS IN EPILEPTIC PATIENTS. 132710 02-13

### CEREBROVASCULAR

- TEMPORARY ALTERATION OF CEREBROVASCULAR PERMEABILITY TO PLASMA PROTEIN DURING DRUG-INDUCED SEIZURES. 122177 02-03

### CHANGE

- THE CHANGE OF BEHAVIOR PATTERN OF ALCOHOL ADDICTS TREATED WITH CYANAMIDE DOUBLE MEDICATION - OBSERVATIONS BY THEIR FAMILIES. 129088 02-11

### CHANGES

- RESERPINE INDUCED ALTERATIONS IN BRAIN AMINES AND THEIR RELATIONSHIP TO CHANGES IN THE INCIDENCE OF MINIMAL ELECTROSHOCK SEIZURES IN MICE. 120360 02-03
- PRELIMINARY NOTE: CHANGES IN RNA CONTENT OF SYMPATHETIC GANGLION CELLS OF RESERPINE PRETREATED RATS. 121283 02-03
- THE EFFECTS OF PROCAINE, AMYLOBARBITONE ON DRUG-INDUCED CHANGES IN THE SURFACE POTENTIALS OF AN ISOLATED SYMPATHETIC GANGLION. 121302 02-03
- SOME QUANTITATIVE BEHAVIORAL CHANGES IN L-DOPA THERAPY. 121884 02-14
- TIME DEPENDENT CHANGES IN BRAIN 3H-NOREPINEPHRINE DISAPPEARANCE CAUSED BY L-DOPA ADMINISTRATION. 122170 02-03
- EFFECT OF NEUROTROPIC AGENTS ON CHANGES IN BIOELECTRIC ACTIVITY OF THE RENAL NERVE, EVOKED BY STIMULATION OF THE DESCENDING COLUMNS OF THE SPINAL CORD. 125262 02-03
- A PRELIMINARY STUDY OF SELECTED EMOTIONAL CHANGES IN PARKINSONIANS ON L-DOPA THERAPY. 125809 02-14
- CHANGES IN OPERANT BEHAVIOR AS AN INDEX OF A WITHDRAWAL STATE FROM MORPHINE IN RATS. 127528 02-04
- CHANGES IN STAFF ANXIETY AND ATTITUDES DURING A DOUBLE-BLIND STUDY OF HALOPERIDOL IN ACUTE SCHIZOPHRENICS WITHIN A STRUCTURED MILIEU. 128349 02-08

## Psychopharmacology Abstracts

### PHARMACOLOGICAL IMPLICATIONS OF THE CHANGES OF BRAIN

- MONOAMINE TURNOVER RATES ELICITED BY (L) AMPHETAMINE AND SOME CHEMICALLY RELATED COMPOUNDS. (UNPUBLISHED PAPER). 132368 02-03
- STRUCTURAL AND ULTRASTRUCTURAL CHANGES IN DEVELOPING SYMPATHETIC GANGLIA INDUCED BY GUANETHIDINE. 132645 02-03
- CHANGES IN TYROSINE HYDROXYLASE AND DOPA DECARBOXYLASE INDUCED BY PHARMACOLOGICAL AGENTS. 132706 02-03
- BEHAVIORAL CHANGES OF CHRONIC SCHIZOPHRENIC PATIENTS GIVEN L-5-HYDROXYTRYPTOPHAN. 132977 02-08
- ULTRASTRUCTURAL CHANGES IN ISOLATED RAT BRAIN MITOCHONDRIA. 133048 02-03
- TEMPERATURE INCREASES AND BLOOD PROTEIN CHANGES WITH NEUROLEPTICS: WITH SPECIAL CONSIDERATION OF THE NEW DIBENZODIAZEPINE DERIVATIVE, CLOZAPINE. 133350 02-15
- RELATIONSHIP BETWEEN HYPOTHERMIA AND SOME CHLORPROMAZINE INDUCED METABOLIC CHANGES IN MOUSE BRAIN. 133526 02-03
- BRAIN BIOCHEMICAL CHANGES IN RATS TREATED WITH CHLORPROMAZINE AND ELECTROSHOCKED DURING EARLY POSTNATAL DEVELOPMENT. 133708 02-03
- CHANGES IN THE NEURONS OF CERTAIN SECTIONS OF THE RAT BRAIN DURING MOTOR STIMULATION INDUCED BY PHENAMINE. 133958 02-03

### CHARACTER

- LITHIUM CARBONATE IN EMOTIONALLY UNSTABLE CHARACTER DISORDER. 126232 02-09

### CHARACTERISTICS

- STIMULUS CHARACTERISTICS OF MARIHUANA COMPONENTS. 120831 02-03
- DRUG IDENTIFICATION, PROPERTIES AND CHARACTERISTICS: NARCOTICS, STIMULANTS, DEPRESSANTS, MARIJUANA AND HALLUCINOGENS. 122148 02-03
- MASKED DEPRESSION IN INTERNAL MEDICINE - THE FREQUENCY AND CLINICAL CHARACTERISTICS. 125862 02-09
- RELATIONSHIP OF PATIENT BACKGROUND CHARACTERISTICS TO EFFICACY OF PHARMACOTHERAPY IN DEPRESSION. 125968 02-10

### CHARACTERIZATION

- FURTHER CHARACTERIZATION OF A REDUCED NICOTINAMIDE ADENINE DINUCLEOTIDE PHOSPHATE DEPENDENT ALDEHYDE REDUCTASE FROM BOVINE BRAIN: INHIBITION BY PHENOTHIAZINE DERIVATIVES. 121634 02-03

### CHEMICAL

- CHEMICAL SYNTHESIS AND ANALGESIC EFFECT OF MORPHINE ETHERAL SULFATES. 119052 02-03
- THYROID IMPRAPHINE CLINICAL AND CHEMICAL INTERACTION: EVIDENCE FOR A RECEPTOR DEFICIT IN DEPRESSION. 127216 02-09
- BLOOD LEVELS OF ANTIEPILEPTIC DRUGS - CHEMICAL DETERMINATION OF ANTIEPILEPTIC DRUGS IN BODY FLUIDS. 129211 02-06
- USE OF PERPHENAZINE IN PSYCHIATRIC EMERGENCIES: THE CONCEPT OF CHEMICAL RESTRAINT. 132957 02-17

### CHEMICALLY

- CHEMICALLY INDUCED DEGENERATION OF INDOLEAMINE - CONTAINING NERVE TERMINALS IN RAT BRAIN. 120813 02-03
- HALOPERIDOL, CLOPENTHIXOL, AND CHLORPROMAZINE IN CHRONIC SCHIZOPHRENIA: CHEMICALLY UNRELATED ANTIPSYCHOTICS AS THERAPEUTIC ALTERNATIVES. 122209 02-08
- PHARMACOLOGICAL IMPLICATIONS OF THE CHANGES OF BRAIN MONOAMINE TURNOVER RATES ELICITED BY (L) AMPHETAMINE AND SOME CHEMICALLY RELATED COMPOUNDS. (UNPUBLISHED PAPER). 132368 02-03

### CHEMISTRY

- COMMENTS ON THE CHEMISTRY OF SCOTOPHOBIN. 121851 02-01
- CHOLINERGIC AND ADRENERGIC EFFECTS OF ATROPINE AND PHYSOSTIGMINE ON BRAIN CHEMISTRY AND LEARNED BEHAVIOR. 122228 02-04

### CHICK

- EFFECTS OF GAMMA-HYDROXYBUTYRATE ON CHICK BEHAVIOUR, ELECTROCORTICAL ACTIVITY AND CROSSED EXTENSOR REFLEXES. 120124 02-05

- EVIDENCE FOR A CONSOLIDATION PROCESS FOLLOWING IMPRINTING IN THE ONE-DAY-OLD CHICK. 132159 02-04
- CHILD**
- TONIC STATUS-EPILEPTICUS PRECIPITATED BY INTRAVENOUS DIAZEPAM IN A CHILD WITH PETIT-MAL STATUS. 123629 02-13
- NEUROPSYCHOLOGICAL TEST PERFORMANCE BEFORE AND AFTER SYMPTOM REMOVAL IN A CHILD WITH GILLES-DE-LA-TOURETTE SYNDROME. 125802 02-14
- CHILDHOOD**
- THE VARIABLE EFFECTS OF LSD-25 ON THE BEHAVIOR OF A HETEROGENEOUS GROUP OF CHILDHOOD SCHIZOPHRENICS. 121403 02-12
- CHILDREN**
- UPTAKE AND LOSS OF 14C-DOPAMINE BY PLATELETS FROM CHILDREN WITH INFANTILE AUTISM. 119968 02-11
- EFFECTS OF PROLONGED PHENOTHIAZINE INTAKE ON PSYCHOTIC AND OTHER HOSPITALIZED CHILDREN. 119969 02-15
- EFFECTS OF IMIPRAMINE AND DEXTROAMPHETAMINE ON BEHAVIOR OF NEUROPSYCHIATRICALY IMPAIRED CHILDREN. 121449 02-14
- SYMPOSIUM: BEHAVIOR MODIFICATION BY DRUGS. III. THE CLINICAL USE OF STIMULANT DRUGS IN CHILDREN. 121988 02-14
- SYMPOSIUM: BEHAVIOR MODIFICATION BY DRUGS. II. PSYCHOLOGICAL EFFECTS OF STIMULANT DRUGS IN CHILDREN WITH MINIMAL BRAIN DYSFUNCTION. 121989 02-14
- THE EFFECT OF METHYLPHENIDATE (RITALIN) ON SUSTAINED ATTENTION IN HYPERACTIVE CHILDREN. 122198 02-11
- TREATMENT OF RESTLESSNESS AND MOODINESS IN CHILDREN. 125954 02-14
- EFFECTS OF DEXTROAMPHETAMINE, CHLORPROMAZINE, AND HYDROXYZINE ON BEHAVIOR AND PERFORMANCE IN HYPERACTIVE CHILDREN. 129494 02-11
- LITHIUM AND CHLORPROMAZINE: A CONTROLLED CROSSEVER STUDY OF HYPERACTIVE SEVERELY DISTURBED YOUNG CHILDREN. 131003 02-11
- LITHIUM TREATMENT OF PSYCHOTIC CHILDREN AND ADOLESCENTS: A CONTROLLED CLINICAL TRIAL. 132189 02-09
- PASPERTIN (METOCLOPRAMIDE) AS A CAUSE OF DYSTONIC HYPERKINETIC SYNDROME IN CHILDREN. 132901 02-15
- BEHAVIOR OF BIOPHYSICAL BLOOD PROPERTIES IN CHILDREN WITH MENTAL DISORDERS RECEIVING CHLORPROMAZINE TREATMENT. 133076 02-03
- CHIMPANZEES**
- COMPARISON OF BEHAVIORAL EFFECTS OF SYNTHETIC (-)-DELTA9-TRANS-TETRAHYDROCANNABINOL AND MARIJUANA EXTRACT DISTILLATE IN CHIMPANZEES. 122398 02-04
- SOME EFFECTS OF (-)-DELTA9-TRANS-TETRAHYDROCANNABINOL ON DELAYED MATCHING TO SAMPLE PERFORMANCE IN CHIMPANZEES. (UNPUBLISHED PAPER). 126242 02-04
- TOLERANCE TO DELTA9-THC UNDER DELAYED MATCHING-TO-SAMPLE TASKS IN CHIMPANZEES: EFFECTS OF DELAY LENGTH. 131450 02-04
- CHLORDIAZEPOXIDE**
- SINGLE VERSUS REPEATED DOSAGE OF THE MINOR TRANQUILIZER CHLORDIAZEPOXIDE (LIBRIUM). 120655 02-17
- CHLORDIAZEPOXIDE MODIFIED EXPLORATION IN RATS. 120788 02-04
- EFFECTS OF CHLORDIAZEPOXIDE UPON SPONTANEOUS ALTERNATION AND THE HIPPOCAMPAL ELECTRICAL ACTIVITY IN WHITE RATS. 120792 02-04
- EFFECTS OF CHLORDIAZEPOXIDE ON PASSIVE AVOIDANCE RESPONSES IN RATS. 123939 02-04
- CHLORDIAZEPOXIDE PLASMA LEVELS AND CLINICAL RESPONSES. 127857 02-14
- EFFECTS OF CHLORDIAZEPOXIDE AND ETHANOL ON THE EXTINCTION OF A CONDITIONED TASTE AVERSION. 130364 02-04
- BENZOCETAMINE AND CHLORDIAZEPOXIDE IN ANXIOUS OUTPATIENTS: A COLLABORATIVE STUDY. 130475 02-10
- CLINICAL EVALUATION OF THE EFFICACY OF MOLINDONE AND CHLORDIAZEPOXIDE IN ANXIOUS OUTPATIENTS. 132717 02-10
- THE USE OF A FIXED DOSAGE COMBINATION OF AMITRIPTYLINE AND CHLORDIAZEPOXIDE IN THE TREATMENT OF PATIENTS SUFFERING FROM ANXIETY AND DEPRESSION. 132754 02-09
- COMPARISON OF CHLORDIAZEPOXIDE, METHYSERGIDE, AND CINANSERIN AS MODIFIERS OF PUNISHED BEHAVIOR AND AS ANTAGONISTS OF N,N DIMETHYLTRYPTAMINE. 132776 02-04
- DELIRIUM TREMENS: A COMPARISON OF INTRAVENOUS TREATMENT WITH DIAZEPAM AND CHLORDIAZEPOXIDE. 132869 02-11
- ENHANCEMENT OF PROGRESSIVE-RATIO PERFORMANCE BY CHLORDIAZEPOXIDE AND PHENOBARBITAL. 133725 02-04
- CHLORIDE**
- EFFECTS OF LITHIUM CHLORIDE ON LEARNED RESPONSES: ACQUISITION, RETENTION, AND EXPRESSION. 128338 02-04
- THE EFFECT OF LITHIUM CHLORIDE ON THE ELECTROLYTE COMPOSITION OF CEREBROSPINAL FLUID OF THE RAT. 130355 02-03
- DISSOCIATION OF VERTICAL AND HORIZONTAL COMPONENTS OF ACTIVITY IN RATS TREATED WITH LITHIUM CHLORIDE. 133521 02-04
- CHLORIMIPRAMINE**
- TREATMENT OF DEPRESSIONS WITH CHLORIMIPRAMINE: LITERATURE REVIEW AND CLINICAL STUDIES. 133315 02-07
- CHLORMETHIAZOLE**
- TREATMENT OF ACUTE ALCOHOL WITHDRAWAL WITH CHLORMETHIAZOLE (HEMINEVRIN). 123886 02-11
- CHLORMETHIAZOLE, SLEEP, AND DRUG WITHDRAWAL. 126197 02-14
- CHLOROAMPHETAMINES**
- DRUG DISPOSITION AS A FACTOR IN THE LOWERING OF BRAIN SEROTONIN BY CHLOROAMPHETAMINES IN THE RAT. 121204 02-03
- CHLOROQUINE**
- CHLOROQUINE INDUCED DEPRESSION OF NEUROMUSCULAR TRANSMISSION. 120233 02-03
- CHLORPHERMINE**
- THE CENTRAL HYPOTENSIVE ACTION OF AMPHETAMINE, EPHEDRINE, PHENTERMINE, CHLORPHERMINE AND FENFLURAMINE. 122446 02-03
- EFFECT OF FENFLURAMINE, CHLORPHERMINE AND RELATED COMPOUNDS ON THE BEHAVIOR OF AGGRESSIVE MICE. 133131 02-04
- CHLORPROMAZINE**
- EFFECTS OF CHLORPROMAZINE FREE RADICAL ON BRAIN AND MICROSOMAL ENZYMES. 118913 02-03
- THE MECHANISM OF EXCITABILITY BLOCKADE BY CHLORPROMAZINE. 119162 02-03
- THE BEHAVIOR OF WORKER AND NON-WORKER RATS UNDER THE INFLUENCE OF (-)-DELTA9-TRANS-TETRAHYDROCANNABINOL, CHLORPROMAZINE AND AMYLOBARBITONE. 119981 02-04
- CLINICAL EVALUATION OF A NEW PSYCHOTROPIC DRUG: Y-4153 - COMPARATIVE STUDY WITH CHLORPROMAZINE USING A DOUBLE-BLIND METHOD. 120632 02-08
- CHLORPROMAZINE: ANOTHER GUANETHIDINE ANTAGONIST. 121216 02-13
- EFFECTS OF HALOPERIDOL AND CHLORPROMAZINE ON CENTRAL ADRENERGIC AND CHOLINERGIC MECHANISMS IN RABBITS. 122026 02-04
- COMPARATIVE STUDY ON THE INHIBITION OF NA<sup>+</sup>, K<sup>+</sup>-ACTIVATED ATPASE ACTIVITY BY CHLORPROMAZINE, PROMAZINE, IMIPRAMINE, AND THEIR MONODESMETHYL METABOLITES. 122091 02-03
- HALOPERIDOL, CLOPENTHIXOL, AND CHLORPROMAZINE IN CHRONIC SCHIZOPHRENIA: CHEMICALLY UNRELATED ANTIPSYCHOTICS AS THERAPEUTIC ALTERNATIVES. 122209 02-08
- PHOTOTOXICITY AND PHOTONUCLEOPHILIC AROMATIC SUBSTITUTION IN CHLORPROMAZINE. 122246 02-01
- CALCIUM EFFLUX AND RESPIRATORY INHIBITION IN BRAIN MITOCHONDRIA: EFFECTS OF CHLORPROMAZINE METABOLITES. 122535 02-03
- A COMPARISON OF LITHIUM CARBONATE AND CHLORPROMAZINE IN THE TREATMENT OF EXCITED SCHIZO-AFFECTIVES. 122662 02-08
- BRAIN AMINO ACIDS AS AFFECTED BY ACUTE AND CHRONIC ADMINISTRATION OF CHLORPROMAZINE. 122989 02-03

## Subject Index

## Psychopharmacology Abstracts

- EFFECTS OF CHLORPROMAZINE, TRIFLUOPERAZINE, PROMAZINE AND IMIPRAMINE ON THE PROPERTIES OF EXCITABLE MEMBRANES. 125258 02-03
- CHLORPROMAZINE IN CHRONIC SCHIZOPHRENIA: THE EFFECT OF AGE AND HOSPITALIZATION ON BEHAVIORAL DOSE-RESPONSE RELATIONSHIPS. 126227 02-08
- IN VIVO METABOLISM OF CHLORPROMAZINE IN SCHIZOPHRENIC PATIENTS. 126709 02-13
- EFFECTS OF DEXTROAMPHETAMINE, CHLORPROMAZINE, AND HYDROXYZINE ON BEHAVIOR AND PERFORMANCE IN HYPERACTIVE CHILDREN. 129494 02-11
- CHLORPROMAZINE INDUCED ALTERNATIONS OF CARBOHYDRATE METABOLISM: EFFECT OF CHLORPROMAZINE PRETREATMENT ON THE INSULIN RESPONSE TO GLUCOSE AND TOLBUTAMIDE IN THE ADRENALECTOMIZED RAT. (PH.D. DISSERTATION). 130182 02-03
- A CLINICAL STUDY OF MESORIDAZINE AND CHLORPROMAZINE IN RELAPSED SCHIZOPHRENIC PATIENTS. 130474 02-08
- LITHIUM AND CHLORPROMAZINE: A CONTROLLED Crossover STUDY OF HYPERACTIVE SEVERELY DISTURBED YOUNG CHILDREN. 131003 02-11
- PRENATAL CHLORPROMAZINE TREATMENT AND ADULT AVOIDANCE LEARNING. 131280 02-04
- TYROSINE HYDROXYLATION IN THE RAT STRIATUM IN VITRO AND IN VIVO AFTER NIGRAL LESION AND CHLORPROMAZINE TREATMENT. 132683 02-03
- BEHAVIOR OF BIOPHYSICAL BLOOD PROPERTIES IN CHILDREN WITH MENTAL DISORDERS RECEIVING CHLORPROMAZINE TREATMENT. 133076 02-03
- RESPIRATORY EFFECTS OF CHLORPROMAZINE IN UNANESTHETIZED DECEREBRATE CATS. 133292 02-03
- THE ELECTRIC INTERPHASIC BLOOD POTENTIAL FOR SODIUM AND POTASSIUM IONS IN PATIENTS TREATED WITH CHLORPROMAZINE FOR VARIOUS MENTAL DISORDERS. 133463 02-13
- ALTERATIONS BY CENTRALLY ACTING DRUGS OF THE SUPPRESSION OF SELF-STIMULATION BEHAVIOR IN THE RAT BY TETRABENAZINE, PHYSOSTIGMINE, CHLORPROMAZINE AND PENTOBARBITAL. 133473 02-04
- RELATIONSHIP BETWEEN HYPOTHERMIA AND SOME CHLORPROMAZINE INDUCED METABOLIC CHANGES IN MOUSE BRAIN. 133526 02-03
- THE EFFECTS OF TRANILCYPROMINE AND CHLORPROMAZINE UPON THE SPONTANEOUS MOTOR ACTIVITY OF MICE. 133624 02-04
- BRAIN BIOCHEMICAL CHANGES IN RATS TREATED WITH CHLORPROMAZINE AND ELECTROSHOCKED DURING EARLY POSTNATAL DEVELOPMENT. 133708 02-03
- CHOICE**  
THE CLINICAL CHOICE OF SEDATIVE HYPNOTICS. 118899 02-15
- CHOLESTASIS**  
THE EFFECTS OF PHENOBARBITAL ON BILE SALTS AND BILIRUBIN IN PATIENTS WITH INTRAHEPATIC AND EXTRAHEPATIC CHOLESTASIS. 121580 02-13
- CHOLINE**  
EFFECT OF CENTRAL STIMULANTS AND DEPRESSANTS ON MOUSE BRAIN ACETYLCHOLINE AND CHOLINE LEVELS. 120232 02-03
- CHOLINERGIC**  
DRUG-INDUCED ALTERATIONS IN THE ACTIVITY OF RAT BRAIN CHOLINERGIC ENZYMES: I. IN VITRO AND IN VIVO EFFECT OF AMPHETAMINE. 120230 02-03
- EFFECTS OF CHOLINERGIC AGONISTS AND ANTAGONISTS ON SELF-STIMULATION BEHAVIOR IN THE RAT. 120560 02-04
- ON THE INVOLVEMENT OF THE CAUDATE-PUTAMEN, GLOBUS-PALLIDUS AND SUBSTANTIA-NIGRA WITH NEUROLEPTIC AND CHOLINERGIC MODIFICATION OF LOCOMOTOR ACTIVITY. 121274 02-03
- EFFECTS OF HALOPERIDOL AND CHLORPROMAZINE ON CENTRAL ADRENERGIC AND CHOLINERGIC MECHANISMS IN RABBITS. 122026 02-04
- CHOLINERGIC AND ADRENERGIC EFFECTS OF ATROPINE AND PHYSOSTIGMINE ON BRAIN CHEMISTRY AND LEARNED BEHAVIOR. 122228 02-04
- THE CHOLINERGIC SYSTEM, AMNESIA AND MEMORY. 122390 02-04
- SEROTONERGIC AND CHOLINERGIC INVOLVEMENT IN HABITUATION OF ACTIVITY AND SPONTANEOUS ALTERNATION OF RATS IN A Y-MAZE. 131131 02-03
- THE EFFECTS OF CHOLINERGIC AGENTS UPON BEHAVIOR CONTROLLED BY AN AVOIDANCE SCHEDULE THAT EMPLOYS SIGNAL RESPONSE INDEPENDENT SHOCK. 131449 02-04
- RHYTHMIC ACTIVITY OF THE VESTIBULO-OCULOMOTOR SYSTEM INDUCED BY A CHOLINERGIC DRUG. 132164 02-03
- CHOLINERGIC EFFECTS ON ADRENERGIC NEUROTRANSMITTERS IN RABBIT BRAIN PARTS. 132690 02-03
- INTERACTION BETWEEN CHOLINERGIC AND CATECHOLAMINERGIC NEURONES IN RAT BRAIN. 132703 02-03
- ACTION AND INTERACTION OF CHOLINERGIC AGONISTS AND ANTAGONISTS ON SELF-STIMULATION. 133298 02-04
- A POSSIBLE CAUDATE CHOLINERGIC MECHANISM IN TWO INSTRUMENTAL CONDITIONED RESPONSES. 133471 02-04
- CHOLINOLYTIC**  
STRUCTURAL ANALYSIS OF TROPINES: STRUCTURE OF BENZOYL-TROPINE AND BENZOYL-PSI-TROPINE (TROPACOCAINE) AND THEIR CHOLINOLYTIC ACTIONS. 132802 02-01
- CHOREA**  
BIOCHEMICAL AND PHARMACOLOGIC STUDIES OF HUNTINGTONS CHOREA. (UNPUBLISHED PAPER). 125367 02-11
- CHOREIC**  
TREATMENT OF CHOREIC MOVEMENTS WITH PERPHENAZINE. 128336 02-11
- CHOREIFORM**  
ATHETOID AND CHOREIFORM HYPERKINESIAS PRODUCED BY CAUDATE APPLICATION OF DOPAMINE IN CATS. 122195 02-04
- CHOREO-ATHETOSIS**  
HALOPERIDOL IN DOPA INDUCED CHOREO-ATHETOSIS. 130018 02-11
- CHP**  
N-PHENYL-N-BENZYL-4-AMINO-1-METHYLPYPERIDIN HCL (BAMIPINE) COMBINED WITH 1-CYCLOHEXYL-1-METHYL 2 METHYLAMINOETHANE (CHP) FOR THE INTERIM AND TERMINAL TREATMENT OF DEPRESSIVE SYNDROMES. 122296 02-07
- CHROMOSOMES**  
HUMAN CHROMOSOMES AND OPIATES. 126231 02-15
- CHRONIC**  
THE EFFECTS OF CHRONIC IMIPRAMINE ADMINISTRATION ON RAT BRAIN LEVELS OF SEROTONIN, 5-HYDROXYINDOLEACETIC ACID, NOREPINEPHRINE AND DOPAMINE. 120359 02-03
- EVALUATING THE LONG-TERM NEED FOR ANTIPARKINSON DRUGS BY CHRONIC SCHIZOPHRENICS. 120699 02-08
- ACCUMULATION AND ELIMINATION OF A NOVEL METABOLITE DURING CHRONIC ADMINISTRATION OF THE PHENOTHIAZINE DRUG PERAZINE TO RATS. 121198 02-03
- CLINICAL EFFECTS OF MEPIPRAZOL ON HOSPITALIZED CHRONIC SCHIZOPHRENICS. 122199 02-07
- HALOPERIDOL, CLOPENTHIXOL, AND CHLORPROMAZINE IN CHRONIC SCHIZOPHRENIA: CHEMICALLY UNRELATED ANTIPSYCHOTICS AS THERAPEUTIC ALTERNATIVES. 122209 02-08
- INHIBITORY EFFECTS OF CHRONIC ADMINISTRATION OF MORPHINE ON URIDINE AND THYMIDINE INCORPORATING ABILITIES OF MOUSE LIVER AND BRAIN SUBCELLULAR FRACTIONS. 122245 02-03
- BRAIN AMINO ACIDS AS AFFECTED BY ACUTE AND CHRONIC ADMINISTRATION OF CHLORPROMAZINE. 122989 02-03
- ALTERED METABOLISM OF SEROTONIN IN THE BRAIN OF THE RAT AFTER CHRONIC INGESTION OF D-AMPHETAMINE. 123938 02-03
- SLEEP OF SEVEN PHENOTHIAZINE RESISTANT, DRUG-FREE CHRONIC SCHIZOPHRENICS. 124257 02-17
- CHRONIC HALLUCINOGENIC DRUG USE AND THOUGHT DISTURBANCE. 126221 02-14
- CHLORPROMAZINE IN CHRONIC SCHIZOPHRENIA: THE EFFECT OF AGE AND HOSPITALIZATION ON BEHAVIORAL DOSE-RESPONSE RELATIONSHIPS. 126227 02-08

- AMINES AND APHRODISIACS IN CHRONIC SCHIZOPHRENIA. 128347 02-08
- A ONE-YEAR TRIAL OF CLOPENTHIXOL IN CHRONIC SCHIZOPHRENIA. 130669 02-08
- CONDITIONED REFLEX ANALYSIS OF CHRONIC SCHIZOPHRENIA. 131571 02-08
- FLUSPIRILENE IN THE TREATMENT OF CHRONIC SCHIZOPHRENIC OUTPATIENTS. 132718 02-08
- THE EFFECTS OF CHRONIC ADMINISTRATION OF TRANS-DELTA9-TETRAHYDROCANNABINOL ON BEHAVIOR AND THE CARDIOVASCULAR SYSTEM OF DOGS. 132719 02-03
- BEHAVIORAL CHANGES OF CHRONIC SCHIZOPHRENIC PATIENTS GIVEN L-5-HYDROXYTRYPTOPHAN. 132977 02-08
- PIMOZIDE: A COMPARATIVE STUDY IN THE TREATMENT OF CHRONIC SCHIZOPHRENIC PATIENTS. 133220 02-07
- PRELIMINARY STUDY OF PERPHENAZINE ENANTHATE IN THE TREATMENT OF CHRONIC SCHIZOPHRENIA. 133261 02-07
- EFFECTS OF CHRONIC PRAZEPAM ADMINISTRATION ON DRUG METABOLISM IN MAN AND RAT. 133685 02-13
- EFFECT OF NITRAZEPAM IN CHRONIC OBSTRUCTIVE BRONCHITIS. 133719 02-15
- CHRONIC EFFECTS OF SINGLE NITROGEN MUSTARD INJECTION ON THE ACTIVITY RESPONSE OF ALBINO RATS. 134101 02-04
- GP-45795: A CONTROLLED EVALUATION IN CHRONIC SCHIZOPHRENIC PATIENTS. 134197 02-08
- CHRONICALLY**
- FURTHER STUDIES IN CATS CHRONICALLY TREATED WITH P-CHLOROPHENYLALANINE (PCPA). 119391 02-03
- EFFECTS OF AMPHETAMINE AND PILOCARPINE ON EATING BEHAVIOR IN RATS WITH CHRONICALLY LOW ACETYLCHOLINESTERASE LEVELS. 121177 02-04
- BRAIN MICROSOmal PROTEIN KINASE IN THE CHRONICALLY MORPHINIZED RAT. 121355 02-03
- CINANSERIN**
- COMPARISON OF CHLORDIAZEPOXIDE, METHYSERGIDE, AND CINANSERIN AS MODIFIERS OF PUNISHED BEHAVIOR AND AS ANTAGONISTS OF N,N DIMETHYLTRYPTAMINE. 132776 02-04
- CIRCULATION**
- THE EFFECT OF NEUROLEPTIC DRUGS ON CEPHALIC CIRCULATION IN ELDERLY PSYCHIATRIC PATIENTS. 133353 02-11
- CL-67772**
- CLINICAL TRIAL OF AMOXAPINE (CL-67772) WITH DEPRESSED PATIENTS. 132895 02-07
- A PILOT STUDY OF AMOXAPINE (CL-67772) IN DEPRESSED INPATIENTS. 132951 02-07
- CLASSES**
- A STUDY OF VARIOUS SUBSTANCES AND CLASSES OF SUBSTANCES FOR INDUCTION PROPERTIES: II. COMMUNICATION. 133297 02-01
- CLASSICAL**
- CENTRAL EFFECTS OF ATROPINE UPON AVERSIVE CLASSICAL CONDITIONING IN RABBITS. 123934 02-04
- CLASSIFICATION**
- THE CLASSIFICATION OF PSYCHOTROPIC DRUGS. 125038 02-17
- CLEARANCE**
- THE ONTOGENY OF 14C-DOPAMINE CLEARANCE FROM THE CEREBRAL VENTRICLES OF DEVELOPING RHESUS MONKEYS. 120218 02-03
- CLINIC**
- A LITHIUM CLINIC. 127390 02-09
- A CASE OF EARLY OXAZEPAM ADDICTION TREATED IN THE OUTPATIENT CLINIC. 133450 02-15
- CLINICAL**
- THE CLINICAL CHOICE OF SEDATIVE HYPNOTICS. 118899 02-15
- A CLINICAL TRIAL OF BENZAZEPINE (SCH-12679) IN ACUTE SCHIZOPHRENIC PATIENTS. 118986 02-08
- CLINICAL EVALUATION OF A NEW PSYCHOTROPIC DRUG; Y-4153 -- COMPARATIVE STUDY WITH CHLORPROMAZINE USING A DOUBLE-BLIND METHOD. 120632 02-08
- COMPARISON OF THE CLINICAL AND ELECTROENCEPHALOGRAPHICAL EFFECTS OF MOLINDONE AND TRIFLUOPERAZINE IN ACUTE SCHIZOPHRENIC PATIENTS. 120824 02-08
- A CLINICAL STUDY OF LIMBITROL IN THE TREATMENT OF ANXIETY/DEPRESSION IN GENERAL PRACTICE. 121309 02-10
- CLINICAL OBSERVATIONS IN ANAFRANIL THERAPY. 121900 02-09
- SOME CLINICAL AND SOCIAL ASPECTS OF LYSERGIC ACID DIETHYLAMIDE: PART I. 121932 02-12
- SYMPOSIUM: BEHAVIOR MODIFICATION BY DRUGS. III. THE CLINICAL USE OF STIMULANT DRUGS IN CHILDREN. 121988 02-14
- CLINICAL EFFECTS OF MEPIPAZOL ON HOSPITALIZED CHRONIC SCHIZOPHRENICS. 122199 02-07
- CLINICAL TESTING OF A RETARD NEUROLEPTIC: FLUPHENAZINE ENANTHATE (MODITEN-RETARD, SQUIBB LAB.). 122306 02-07
- OBSERVATIONS ON THE RELATION OF MIGRAINE AND EPILEPSY: AN ELECTROENCEPHALOGRAPHIC, PSYCHOLOGICAL, AND CLINICAL STUDY USING ORAL TYRAMINE. 123637 02-13
- CLINICAL AND ELECTROENCEPHALOGRAPHIC EFFECTS OF ANAFRANIL TREATMENT IN DEPRESSION. 123884 02-13
- MASKED DEPRESSION IN INTERNAL MEDICINE -- THE FREQUENCY AND CLINICAL CHARACTERISTICS. 125862 02-09
- MASKED DEPRESSION IN VARIOUS FIELDS IN CLINICAL MEDICINE -- FROM THE STANDPOINT IN INTERNAL MEDICINE ESPECIALLY IN THE FIELDS OF TREATMENT. 125999 02-09
- ACUTE PSYCHOSIS INDUCED BY PSYCHOTOMIMETIC DRUG ABUSE: CLINICAL FINDINGS. 126219 02-12
- THE IMPACT OF SCIENTIFIC MODELS ON CLINICAL PSYCHOPHARMACOLOGY: A PSYCHIATRISTS VIEW. 126937 02-17
- THE IMPACT OF SCIENTIFIC MODELS ON CLINICAL PSYCHOPHARMACOLOGY: A PSYCHIATRISTS VIEW. 126938 02-17
- THE IMPACT OF SCIENTIFIC MODELS ON CLINICAL PSYCHOPHARMACOLOGY: AN INTERNISTS VIEW. 126939 02-17
- THE IMPACT OF SCIENTIFIC MODELS ON CLINICAL PSYCHOPHARMACOLOGY: A PHARMACOLOGISTS VIEW. 126940 02-17
- THYROID IMIPRAMINE CLINICAL AND CHEMICAL INTERACTION: EVIDENCE FOR A RECEPTOR DEFICIT IN DEPRESSION. 127216 02-09
- DRUG THERAPY OF CLINICAL DEPRESSIONS -- CURRENT STATUS AND IMPLICATIONS FOR RESEARCH ON NEUROPHARMACOLOGY OF THE AFFECTIVE DISORDERS. 127220 02-09
- CHLORDIAZEPOXIDE PLASMA LEVELS AND CLINICAL RESPONSES. 127857 02-14
- HALOPERIDOL: FIFTEEN YEARS OF CLINICAL EXPERIENCE. 127878 02-17
- LITHIUM CARBONATE PROPHYLAXIS IN AFFECTIVE DISORDERS. (CLINICAL VERSUS RESEARCH APPLICATIONS). 127880 02-09
- A CLINICAL EVALUATION OF THE HYPNOTIC EFFICACY AND SAFETY OF MEBUTAMATE. 128341 02-11
- CLINICAL RESULTS: INDOKLON VERSUS ECT. 129382 02-12
- TREATMENT OF TARDIVE DYSKINESIA: III. CLINICAL EFFICACY OF A DOPAMINE COMPETING AGENT, METHYLDOPA. 129833 02-13
- A CLINICAL STUDY OF MESORIDAZINE AND CHLORPROMAZINE IN RELAPSED SCHIZOPHRENIC PATIENTS. 130474 02-08
- NICOTINIC ACID, THIORIDAZINE, FLUOXYMESTERONE AND THEIR COMBINATIONS IN HOSPITALIZED GERIATRIC PATIENTS: A SYSTEMATIC CLINICAL STUDY. 130668 02-11
- HYPERTENSIVE EPISODES AFTER ADDING METHYLPHENIDATE (RITALIN) TO TRICYCLIC ANTIDEPRESSANTS: (REPORT OF THREE CASES AND REVIEW OF CLINICAL ADVANTAGES). 131348 02-15
- LITHIUM TREATMENT OF PSYCHOTIC CHILDREN AND ADOLESCENTS: A CONTROLLED CLINICAL TRIAL. 132189 02-09



## Subject Index

## Psychopharmacology Abstracts

- CLINICAL EVALUATION OF THE EFFICACY OF MOLINDONE AND CHLORDIAZEPOXIDE IN ANXIOUS OUTPATIENTS. 132717 02-10
- CLINICAL STUDY OF ARGININE ASPARTATE IN SECONDARY SEXUAL IMPOTENCIES. 132753 02-11
- OPIRAN, ANXIETY AND PSYCHOSIS: CLINICAL TESTING OF A NEW INCISIVE NEUROLEPTIC. 132766 02-07
- THE EFFECT OF DIPHENYLDANTOIN ON THE CLINICAL MANIFESTATIONS AND EXCRETION OF 5-HYDROXYINDOLEACETIC ACID IN PARKINSONS DISEASE. 132808 02-11
- CLINICAL AND EEG EFFECTS OF GB-94, A TETRACYCLIC ANTIDEPRESSANT (EEG MODEL IN DISCOVERY OF A NEW PSYCHOTROPIC DRUG). 132894 02-07
- CLINICAL TRIAL OF AMOXAPINE (CL-67772) WITH DEPRESSED PATIENTS. 132895 02-07
- MANDRAX: CLINICAL, PHARMACOLOGICAL AND TOXICOLOGICAL ASPECTS: STUDY OF 106 OBSERVATIONS. 132903 02-07
- A CLINICAL STUDY OF ENCEPHABOL IN GERIATRICS. 132919 02-11
- LITHIUM IN MANIA: CLINICAL TRIALS AND CONTROLLED STUDIES. (UNPUBLISHED PAPER) 132972 02-09
- CLINICAL EVALUATION OF ANALGESIC DRUGS. 133141 02-13
- MORBID JEALOUSY: CLINICAL TESTING OF TREATMENT WITH PROPERICIAZINE. 133172 02-11
- TREATMENT OF DEPRESSIONS WITH CHLORIMIPRAMINE: LITERATURE REVIEW AND CLINICAL STUDIES. 133315 02-07
- CLINICAL EVALUATION OF SINEQUAN. 133321 02-10
- CLINICAL STUDY OF THE ACTION OF THIORIDAZINE RETARD POLFA. 133462 02-07
- CLINICAL PSYCHOPHARMACOLOGICAL ASSESSMENT AND LONG-TERM OBSERVATION USING ELECTRONIC DATA PROCESSING. 133482 02-17
- CLINICAL PHARMACOLOGY OF 5-HYDROXYTRYPTAMINE AND CATECHOLAMINES VENOMOTOR RECEPTORS. 133749 02-13
- CLONIDINE**
- SUPPRESSION BY CLONIDINE (ST-155) OF CARDIAC ARRHYTHMIAS INDUCED BY DIGITALIS. 122181 02-03
- CLONIDINE INDUCED INTRAHYPOTHALAMIC STIMULATION OF EATING IN RATS. 122395 02-04
- ADRENERGIC NEURON BLOCKADE BY CLONIDINE: COMPARISON WITH GUANETHIDINE AND LOCAL ANESTHETICS. 133132 02-03
- CLOPENTHIXOL**
- HALOPERIDOL, CLOPENTHIXOL, AND CHLORPROMAZINE IN CHRONIC SCHIZOPHRENIA: CHEMICALLY UNRELATED ANTIPSYCHOTICS AS THERAPEUTIC ALTERNATIVES. 122209 02-08
- A ONE-YEAR TRIAL OF CLOPENTHIXOL IN CHRONIC SCHIZOPHRENIA. 130669 02-08
- CLORAZEPATE**
- DIGITAL COMPUTER ANALYZED SLEEP ELECTROENCEPHALOGRAM (SLEEP PRINTS) IN PREDICTING ANXIOLYTIC PROPERTIES OF CLORAZEPATE DIPOTASSIUM (TRANXENE). 132950 02-14
- CLORAZEPATE DIPOTASSIUM IN ANXIETY: A DOUBLE-BLIND TRIAL WITH DIAZEPAM CONTROLS. 132952 02-07
- SOMATOSENSORY EVOKED POTENTIAL: AN OBJECTIVE INDICATOR OF THE THERAPY EFFICACY OF A NEW PSYCHOTROPIC DRUG, CLORAZEPATE DIPOTASSIUM (TRANXENE). 132953 02-07
- CLOUD**
- THE BLACK CLOUD: THE RECOGNITION AND TREATMENT OF ENDOGENOUS DEPRESSION IN GENERAL PRACTICE. 122095 02-17
- CLOZAPINE**
- TEMPERATURE INCREASES AND BLOOD PROTEIN CHANGES WITH NEUROLEPTICS: WITH SPECIAL CONSIDERATION OF THE NEW DIBENZODIAZEPINE DERIVATIVE, CLOZAPINE. 133350 02-15
- CNS**
- AVOIDANCE ACQUISITION AND CNS STIMULANTS. 133196 02-04
- CO-BINDING**
- THE EFFECT OF ALTERING LIVER MICROSOMAL CO-BINDING HEMOPROTEIN COMPOSITION ON PENTOBARBITAL INDUCED ANESTHESIA. 122096 02-03
- CO-FACTOR**
- INTRACELLULAR LOCALIZATION AND CO-FACTOR REQUIREMENT OF AMPHETAMINE TETRAZOLIUM REDUCTASE OF GUINEA-PIG BRAIN. 133763 02-03
- COBALT**
- THE ACTION OF SOME ANTICONVULSANT DRUGS ON COBALT INDUCED EPILEPSY AND ON THE BEMEGRIDE THRESHOLD IN ALERT CATS. 123631 02-03
- COCAINE**
- THE EFFECTS OF LOW-DOSE COMBINATIONS OF D-AMPHETAMINE AND COCAINE ON EXPERIMENTALLY INDUCED CONFLICT IN THE RAT. 119173 02-04
- BEHAVIOURAL AND BIOCHEMICAL COMPARISON OF AMPHETAMINE DERIVATIVES, COCAINE, BENZOTROPINE, AND TRICYCLIC ANTIDEPRESSANT DRUGS. 122571 02-03
- COCKERELS**
- EFFECT OF CARBARYL (1-NAPHTHYL-N-METHYLCARBAMATE) ON PENTOBARBITAL INDUCED SLEEPING TIME AND SOME LIVER MICROSOMAL ENZYMES IN WHITE LEGHORN COCKERELS. 121836 02-03
- COGNITIVE**
- EFFECTS OF PROPRANOLOL ON MARIJUANA INDUCED COGNITIVE DYSFUNCTIONING. 119034 02-14
- COLD**
- EFFECT OF COLD EXPOSURE ON DRUG ACTION AND HEPATIC DRUG METABOLISM IN THE RAT. 122247 02-03
- GASTRIC LESIONS INDUCED BY RESTRAINT AND COLD EXPOSURE: ARE CENTRAL ADRENERGIC MECHANISMS INVOLVED. (UNPUBLISHED PAPER). 129461 02-03
- GASTRIC LESIONS INDUCED BY RESTRAINT AND COLD EXPOSURE: A STUDY OF CENTRAL MONOAMINERGIC MECHANISM. (UNPUBLISHED PAPER). 132367 02-03
- COLLABORATIVE**
- DOXEPIN AND AMITRIPTYLINE PERPHENAZINE IN MIXED ANXIOUS DEPRESSED NEUROTIC OUTPATIENTS: A COLLABORATIVE CONTROLLED STUDY. 123933 02-10
- BENZOCETAMINE AND CHLORDIAZEPOXIDE IN ANXIOUS OUTPATIENTS: A COLLABORATIVE STUDY. 130475 02-10
- COLON**
- DRUG USAGE IN THE IRRITABLE COLON SYNDROME. 121779 02-17
- COLUMNS**
- EFFECT OF NEUROTROPIC AGENTS ON CHANGES IN BIOELECTRIC ACTIVITY OF THE RENAL NERVE, EVOKED BY STIMULATION OF THE DESCENDING COLUMNS OF THE SPINAL CORD. 125262 02-03
- COMBINATION**
- THE USE OF A FIXED DOSAGE COMBINATION OF AMITRIPTYLINE AND CHLORDIAZEPOXIDE IN THE TREATMENT OF PATIENTS SUFFERING FROM ANXIETY AND DEPRESSION. 132754 02-09
- THE ADVANTAGES OF THE COMBINATION TREATMENT (L-DOPA AND DECARBOXYLASE INHIBITOR) IN THE PARKINSON SYNDROME. 133518 02-11
- COMBINATIONS**
- THE EFFECTS OF LOW-DOSE COMBINATIONS OF D-AMPHETAMINE AND COCAINE ON EXPERIMENTALLY INDUCED CONFLICT IN THE RAT. 119173 02-04
- NICOTINIC ACID, THIORIDAZINE, FLUOXYMESTERONE AND THEIR COMBINATIONS IN HOSPITALIZED GERIATRIC PATIENTS: A SYSTEMATIC CLINICAL STUDY. 130668 02-11
- COMBINED**
- TRANSFORMATION OF FISCHER RAT EMBRYO CELLS BY THE COMBINED ACTION OF MURINE LEUKEMIA VIRUS AND (-) TRANS-DELTA9-TETRAHYDROCANNABINOL. 121287 02-03
- N-PHENYL-N-BENZYL-4-AMINO-1-METHYLPYPERIDIN HCL (BAMIPINE) COMBINED WITH 1-CYCLOHEXYL-1-METHYL 2 METHYLAMINOETHANE (CHP) FOR THE INTERIM AND TERMINAL TREATMENT OF DEPRESSIVE SYNDROMES. 122296 02-07
- CENTRAL ATROPINE-LIKE TOXICITY IN COMBINED PSYCHOTROPIC DRUG ADMINISTRATION. 133123 02-15

- LEVODOPA COMBINED WITH PERIPHERAL DECARBOXYLASE INHIBITION  
IN PARKINSONS DISEASE. 133807 02-13
- COMMUNICATION**  
A STUDY OF VARIOUS SUBSTANCES AND CLASSES OF SUBSTANCES FOR  
INDUCTOR PROPERTIES. II. COMMUNICATION. 133297 02-01
- COMPARED**  
RELATIVE POTENCY OF TRICHLOROFOS COMPARED TO PENTOBARBITAL  
AS A HYPNOTIC. 121985 02-07
- COMPARISON**  
COMPARISON OF THE DOSE-RESPONSE EFFECTS OF MORPHINE ON BRAIN  
AMINES, ANALGESIA AND ACTIVITY IN MICE. 119037 02-03  
COMPARISON OF THE CLINICAL AND ELECTROENCEPHALOGRAPHICAL  
EFFECTS OF MOLINDONE AND TRIFLUOPERAZINE IN ACUTE  
SCHIZOPHRENIC PATIENTS. 120824 02-08  
METHYSERGIDE IN MANIA: A DOUBLE-BLIND COMPARISON WITH  
THIORIDAZINE. 121335 02-09  
ALCOHOL AND MARIJUANA: A COMPARISON OF EFFECTS ON A  
TEMPORALLY CONTROLLED OPERANT IN HUMANS. 122178 02-14  
COMPARISON OF BEHAVIORAL EFFECTS OF SYNTHETIC (-)-DELTA9-TRANS-  
TETRAHYDROCANNABINOL AND MARIJUANA EXTRACT DISTILLATE IN  
CHIMPANZEES. 122398 02-04  
BEHAVIOURAL AND BIOCHEMICAL COMPARISON OF AMPHETAMINE  
DERIVATIVES, COCAINE, BENZTROPINE, AND TRICYCLIC  
ANTIDEPRESSANT DRUGS. 122571 02-03  
A COMPARISON OF LITHIUM CARBONATE AND CHLORPROMAZINE IN  
THE TREATMENT OF EXCITED SCHIZO-AFFECTIVES. 122662 02-08  
A DOUBLE-BLIND SEQUENTIAL COMPARISON OF DOXEPIN WITH  
AMITRIPTYLINE IN DEPRESSED PATIENTS. 131344 02-09  
COMPARISON OF CARISOPRODOL, BUTABARBITAL, AND PLACEBO IN  
TREATMENT OF THE LOW BACK SYNDROME. 132713 02-11  
COMPARISON OF CHLORDIAZEPOXIDE, METHYSERGIDE, AND CINANSERIN  
AS MODIFIERS OF PUNISHED BEHAVIOR AND AS ANTAGONISTS OF  
N,N DIMETHYLTRYPTAMINE. 132776 02-04  
DELIRIUM TREMENS: A COMPARISON OF INTRAVENOUS TREATMENT  
WITH DIAZEPAM AND CHLORDIAZEPOXIDE. 132869 02-11  
A DOUBLE-BLIND COMPARISON OF THE EFFICACY OF EX-10-029 AND  
TRIHENXYPHENIDYL HYDROCHLORIDE IN RELIEVING DRUG-INDUCED  
PARKINSONIAN SYMPTOMS. 132956 02-07  
ADRENERGIC NEURON BLOCKADE BY CLONIDINE: COMPARISON WITH  
GUANETHIDINE AND LOCAL ANESTHETICS. 133132 02-03  
COMPARISON OF PERPHENAZINE (TRILAFON TABLETS) WITH  
PERPHENAZINE ENANTHATE (TRILAFON DEPOT INJECTION) IN A  
DOUBLE-BLIND TRIAL. 133351 02-08
- COMPETING**  
TREATMENT OF TARDIVE DYSKINESIA: III. CLINICAL EFFICACY OF A  
DOPAMINE COMPETING AGENT, METHYLDOPA. 129833 02-13
- COMPLICATED**  
PHOBIC ANXIETY SYNDROME COMPLICATED BY DRUG DEPENDENCE AND  
ADDICTION. 122663 02-10
- COMPLICATION**  
SEVERE HYPOTHYROIDISM -- AN EARLY COMPLICATION OF LITHIUM  
THERAPY. 121979 02-15
- COMPLICATIONS**  
PULMONARY COMPLICATIONS AFTER ESOPHAGOGASTROSCOPY USING  
DIAZEPAM. 120200 02-15
- COMPOSITION**  
THE EFFECT OF ALTERING LIVER MICROSOMAL CO-BINDING  
HEMOPROTEIN COMPOSITION ON PENTOBARBITAL INDUCED  
ANESTHESIA. 122096 02-03  
THE EFFECT OF LITHIUM CHLORIDE ON THE ELECTROLYTE COMPOSITION  
OF CEREBROSPINAL FLUID OF THE RAT. 130355 02-03
- COMPULSIVE**  
CASUISTIC CONTRIBUTION TO THE PROBLEM OF COMPULSIVE  
LAUGHTER. 126994 02-13
- COMPUTER**  
DIGITAL COMPUTER ANALYZED SLEEP ELECTROENCEPHALOGRAPH (SLEEP  
PRINTS) IN PREDICTING ANXIOLYTIC PROPERTIES OF CLORAZEPATE  
DIPOTASSIUM (TRANXENE). 132950 02-14
- CONCENTRATION**  
PROPHYLACTIC TREATMENT OF MANIC-DEPRESSIVE PSYCHOSIS BY  
LITHIUM CARBONATE: THEORETICAL AND PRACTICAL CONCERN OF  
VARIATIONS IN PLASMA CONCENTRATION. 122316 02-13
- CONCENTRATIONS**  
EFFECT OF 6-HYDROXYDOPAMINE ON CATECHOLAMINE  
CONCENTRATIONS AND BEHAVIOR IN THE MORPHINE TOLERANT RAT. 119048 02-04  
EFFECT OF AMPHETAMINES ON TRYPTOPHAN CONCENTRATIONS IN MICE  
AND RATS. 119301 02-03  
BRAIN CONCENTRATIONS OF LORAZEPAM AND OXAZEPAM AT EQUAL  
DEGREE OF ANTICONVULSANT ACTIVITY. 119302 02-03  
EFFECT OF DRUGS THAT MODIFY 3,5 AMP CONCENTRATIONS ON  
MORPHINE ANALGESIA. 119303 02-03  
RELATIONSHIPS BETWEEN SERUM AND CEREBROSPINAL FLUID  
ANTICONVULSANT DRUG AND FOLIC ACID CONCENTRATIONS IN  
EPILEPTIC PATIENTS. 132710 02-13
- CONCEPT**  
USE OF PERPHENAZINE IN PSYCHIATRIC EMERGENCIES: THE CONCEPT OF  
CHEMICAL RESTRAINT. 132957 02-17  
EFFECTS OF TWO ANTIDEPRESSANTS UPON CONCEPT LEARNING:  
PSYCHOPHYSIOLOGICAL PARAMETERS IN DEPRESSED HUMANS. 134850 02-08
- CONCERN**  
PROPHYLACTIC TREATMENT OF MANIC-DEPRESSIVE PSYCHOSIS BY  
LITHIUM CARBONATE: THEORETICAL AND PRACTICAL CONCERN OF  
VARIATIONS IN PLASMA CONCENTRATION. 122316 02-13  
PSYCHOACTIVE MEDICATION AND CONCERN: THE URBAN PHYSICIANS  
PRACTICAL RX FOR NEUROSES. 131345 02-10
- CONCLUSIONS**  
PERFORMANCE TESTS IN A STUDY OF PHENOTHIAZINES IN  
SCHIZOPHRENIA: CAVEATS AND CONCLUSIONS. 120084 02-08
- CONDITIONED**  
PHYSIOLOGICAL DISPOSITION OF ISOERGINE (FROM ARGYREIA-NERVOSA  
(BURM. F.) BOJER-CONVOLVULACEAE) AND ITS EFFECT ON THE  
CONDITIONED AVOIDANCE RESPONSE IN RATS. 120012 02-03  
SCOPOLAMINE: EFFECTS ON CONDITIONED SUPPRESSION. 121277 02-04  
CONDITIONED SUPPRESSION OF BAR-PRESSING BEHAVIOR BY STIMULI  
ASSOCIATED WITH DRUGS. 124223 02-04  
EFFECT OF MORPHINE DOSE SIZE ON THE CONDITIONED REINFORCING  
POTENCY OF STIMULI PAIRED WITH MORPHINE. 126906 02-04  
EFFECTS OF CHLORDIAZEPOXIDE AND ETHANOL ON THE EXTINCTION OF  
A CONDITIONED TASTE AVERSION. 130364 02-04  
CONDITIONED REFLEX ANALYSIS OF CHRONIC SCHIZOPHRENIAS. 131571 02-08  
EFFECT OF SALICYLATE ON AUDITORY DETECTION THRESHOLDS  
MEASURED BY CONDITIONED AVOIDANCE RESPONSES: SENSORY  
IMPAIRMENT OR MOTIVATION DECREMENT 132543 02-03  
A POSSIBLE CAUDATE CHOLINERGIC MECHANISM IN TWO  
INSTRUMENTAL CONDITIONED RESPONSES. 133471 02-04
- CONDITIONING**  
ACTIVE AVOIDANCE CONDITIONING: EFFECTS OF D-DEPRIVATION  
(DESYNCHRONIZED SLEEP DEPRIVATION) AND OF ALTERED BRAIN  
CATECHOLAMINES. 119832 02-03  
THE ACTION OF IMIPRAMINE, AMITRIPTYLINE, DOXEPIN AND  
BUTRIPTYLINE IN AN OPERANT CONDITIONING SCHEDULE. 120014 02-04  
EFFECTS OF METHAMPHETAMINE ON WELL-PRACTICED DISCRIMINATION  
CONDITIONING OF THE EYELID RESPONSE. 122397 02-14  
CENTRAL EFFECTS OF ATROPINE UPON AVERSIVE CLASSICAL  
CONDITIONING IN RABBITS. 123934 02-04  
CONDITIONING OF FOOD AVERSIONS BY INJECTIONS OF PSYCHOACTIVE  
DRUGS. 123983 02-04

# Subject Index

# Psychopharmacology Abstracts

- HYSTERICAL BLEPHAROSPASM TREATED BY PSYCHOTHERAPY AND  
CONDITIONING PROCEDURES IN A GROUP SETTING. 131347 02-10
- CONDITIONS**
- ETHANOL CONSUMPTION BY RATS UNDER DIFFERENT LIGHTING  
CONDITIONS. 120399 02-05
- AN INVESTIGATION OF AMPHETAMINE ANOREXIA UNDER THREE  
MOTIVATIONAL CONDITIONS OF FREE FEEDING. 122956 02-04
- PREVENTION OF TRAUMATIC SHOCK WITH LEVOMEPROMAZINE UNDER  
EXPERIMENTAL CONDITIONS. 125263 02-03
- INTERACTION OF HOUSING CONDITIONS AND CYCLOHEXIMIDE ON  
MEMORY FORMATION. 131448 02-04
- AMPHETAMINE AGGREGATION EFFECT IN MICE UNDER CONDITIONS OF  
ALTERED MICROSOMAL ENZYMES. 133181 02-05
- CONFIGURATION**
- ANTICONVULSANTS AND PSYCHOTHERAPEUTIC AGENTS OF KNOWN  
ABSOLUTE CONFIGURATION. (PH.D. DISSERTATION). 130163 02-01
- CONFLICT**
- THE EFFECTS OF LOW-DOSE COMBINATIONS OF D-AMPHETAMINE AND  
COCAINE ON EXPERIMENTALLY INDUCED CONFLICT IN THE RAT. 119173 02-04
- CONJUNCTIVAL**
- THE EFFECTS OF CONJUNCTIVAL INSTILLATION OF ESERINE AND  
HOMATROPINE ON PUPILLARY REACTIVITY IN SCHIZOPHRENICS. 127520 02-13
- CONSOLIDATION**
- EVIDENCE FOR A CONSOLIDATION PROCESS FOLLOWING IMPRINTING IN  
THE ONE-DAY-OLD CHICK. 132159 02-04
- CONSTITUENTS**
- ORAL AND PARENTERAL FORMULATIONS OF MARIJUANA  
CONSTITUENTS. 121284 02-06
- SPECTRAL INTERACTIONS OF MARIJUANA CONSTITUENTS  
(CANNABINOIDS) WITH RAT LIVER MICROSOMAL MONOOXYGENASE  
SYSTEM. 122097 02-03
- CONSTRICTED**
- LOCAL SYNTHESIS AND BREAKDOWN OF NORADRENALINE IN  
CONSTRICTED RAT SCIATIC NERVES. 122574 02-03
- CONSUMPTION**
- ETHANOL CONSUMPTION BY RATS UNDER DIFFERENT LIGHTING  
CONDITIONS. 120399 02-05
- EFFECTS OF BARBITAL ON DEPRIVATION INDUCED WATER  
CONSUMPTION BY RATS. 122033 02-04
- SYRUP METHADONE CONSUMPTION BY RATS. 129619 02-04
- EFFECT OF METHAMPHETAMINE ON WATER CONSUMPTION. 130856 02-05
- AGE AND LACK OF HANDLING AS FACTORS IN THE CONSUMPTION OF  
AN ETONITAZENE SOLUTION BY NAIVE RATS. 133133 02-04
- CONTINGENT**
- CONTINGENT NEGATIVE VARIATION AMPLITUDES: MARIJUANA AND  
ALCOHOL. 129831 02-14
- CONTINUUM**
- THE EEG AND BEHAVIORAL CONTINUUM OF THE CROCODILIAN CAIMAN-  
SCLEROPS. 2. EEG AND EMG SPIKE ACTIVITY. 124225 02-03
- CONTRACEPTIVES**
- TYPES OF ORAL CONTRACEPTIVES, DEPRESSION, AND PREMENSTRUAL  
SYMPTOMS. 125961 02-14
- HISTORY OF DEPRESSION AS A RISK FACTOR FOR DEPRESSION WITH  
ORAL CONTRACEPTIVES AND DISCONTINUANCE. 125962 02-14
- CONTROL**
- CONTROL OF BEHAVIORAL SYMPTOMS IN PATIENTS WITH LONG-TERM  
ILLNESS. 120730 02-14
- BEHAVIORAL CONTROL OF DRUG METABOLISM AND BODY  
TEMPERATURE: BIOCHEMICAL AND PHYSIOLOGICAL CORRELATES.  
(PH.D. DISSERTATION). 130761 02-03

- CONTROLLED**
- FLUSPIRILENE AND PIPOTHAZINE UNDECYLENATE, TWO LONG-ACTING  
INJECTABLE NEUROLEPTICS: A DOUBLE-BLIND CONTROLLED TRIAL IN  
RESIDUAL SCHIZOPHRENIA. 121544 02-08
- ALCOHOL AND MARIJUANA: A COMPARISON OF EFFECTS ON A  
TEMPORALLY CONTROLLED OPERANT IN HUMANS. 122178 02-14
- CONTROLLED TRIAL OF PENFLURIDOL IN ACUTE PSYCHOSIS. 122885 02-08
- DOXEPIN AND AMITRIPTYLINE PERPHENAZINE IN MIXED ANXIOUS  
DEPRESSED NEUROTIC OUTPATIENTS: A COLLABORATIVE CONTROLLED  
STUDY. 123933 02-10
- A CONTROLLED EVALUATION OF LITHIUM PROPHYLAXIS IN AFFECTIVE  
DISORDERS. 126205 02-09
- A CONTROLLED STUDY OF THE EFFICACY OF PENTYLENETETRAZOL  
(METRAZOL) WITH HARD-CORE HOSPITALIZED PSYCHOGERIATRIC  
PATIENTS. 127184 02-11
- THE EFFECT OF THE AMITRIPTYLINE ON THE MASKED DEPRESSION -  
COMPARATIVE DOUBLE-BLIND CONTROLLED STUDY. 129737 02-09
- A DOUBLE-BLIND CONTROLLED TRIAL OF PSYCHOTROPIC DRUG  
OXAZOLAM ON NEUROTICS, WITH SPECIAL REFERENCE TO ITS  
HYPNOTIC EFFECT. 130068 02-10
- LITHIUM AND CHLORPROMAZINE: A CONTROLLED CROSSOVER STUDY OF  
HYPERACTIVE SEVERELY DISTURBED YOUNG CHILDREN. 131003 02-11
- THE EFFECTS OF CHOLINERGIC AGENTS UPON BEHAVIOR CONTROLLED BY  
AN AVOIDANCE SCHEDULE THAT EMPLOYS SIGNAL RESPONSE  
INDEPENDENT SHOCK. 131449 02-04
- LITHIUM TREATMENT OF PSYCHOTIC CHILDREN AND ADOLESCENTS: A  
CONTROLLED CLINICAL TRIAL. 132189 02-09
- SCHEDULE CONTROLLED AND DRUG-INDUCED RELEASE OF  
NOREPINEPHRINE-7-3H INTO THE LATERAL VENTRICLE OF RATS. 132689 02-03
- LITHIUM IN MANIA: CLINICAL TRIALS AND CONTROLLED STUDIES.  
(UNPUBLISHED PAPER) 132972 02-09
- GP-45795: A CONTROLLED EVALUATION IN CHRONIC SCHIZOPHRENIC  
PATIENTS. 134197 02-08
- A CONTROLLED STUDY ON THE POSSIBLE EFFECT OF  
DIHYDROERGOTAMINE AGAINST DRYNESS OF THE MOUTH IN  
PATIENTS TREATED WITH TRICYCLIC ANTIDEPRESSANTS. 134312 02-13
- CONTROLS**
- CLORAZEPATE DIPOTASSIUM IN ANXIETY: A DOUBLE-BLIND TRIAL WITH  
DIAZEPAM CONTROLS. 132952 02-07
- CONVENTION**
- INTERNATIONAL CONVENTION ON PSYCHOTROPIC DRUGS. 120735 02-17
- CONVERSION**
- THE NORMAL OCCURRENCE OF TRYPTAMINE IN BRAIN AND ITS  
CONVERSION TO N-METHYL AND N DIMETHYLTRYPTAMINE IN VITRO  
AND IN VIVO. (UNPUBLISHED PAPER). 126244 02-03
- CONVULSANT**
- N-METHYL BICUCULLINE, A CONVULSANT MORE POTENT THAN  
BICUCULLINE. 133716 02-02
- CONVULSIONS**
- BRAIN SEROTONIN AND NOREPINEPHRINE AFTER CONVULSIONS AND  
RESERPINE. 120526 02-03
- CONVULSIVE**
- CONVULSIVE ACTION OF PENICILLIN. 121967 02-03
- CONVULSIVE PROPERTIES OF D-TUBOCURARINE AND CORTICAL  
INHIBITION. 125673 02-03
- COPULATORY**
- EFFECTS OF MONOAMINE OXIDASE INHIBITORS ON THE COPULATORY  
BEHAVIOR OF MALE RATS. 120009 02-04
- CORD**
- ALTERED NOREPINEPHRINE METABOLISM FOLLOWING EXPERIMENTAL  
SPINAL CORD INJURY. PART 2: PROTECTION AGAINST TRAUMATIC  
SPINAL CORD HEMORRHAGIC NECROSIS BY NOREPINEPHRINE  
SYNTHESIS BLOCKADE WITH ALPHA-METHYL-TYROSINE. 121067 02-03

- APOMORPHINE AND ITS EFFECTS ON THE SPINAL CORD.** 121282 02-03  
EFFECT OF NEUROTROPIC AGENTS ON CHANGES IN BIOELECTRIC ACTIVITY OF THE RENAL NERVE, EVOKED BY STIMULATION OF THE DESCENDING COLUMNS OF THE SPINAL CORD. 125262 02-03
- CORRELATES**  
ELECTROENCEPHALOGRAPHIC CORRELATES IN OVERDOSAGE WITH ANTICONVULSIVE DRUGS. 122330 02-15  
BEHAVIORAL CONTROL OF DRUG METABOLISM AND BODY TEMPERATURE; BIOCHEMICAL AND PHYSIOLOGICAL CORRELATES. (PH.D. DISSERTATION). 130761 02-03
- CORRELATION**  
DELTA9-TETRAHYDROCANNABINOL: TEMPORAL CORRELATION OF THE PSYCHOLOGIC EFFECTS AND BLOOD LEVELS AFTER VARIOUS ROUTES OF ADMINISTRATION. 131610 02-14  
SUBSTITUTED 3,4,5 TRIMETHOXYBENZAMIDES: CORRELATION BETWEEN INHIBITION OF PYRUVIC ACID OXIDATION AND ANTICONVULSANT ACTIVITY. 133745 02-03
- CORTEX**  
EFFECTS OF ANESTHETICS ON SODIUM UPTAKE INTO RAT BRAIN CORTEX IN VITRO. 121210 02-03  
THE EFFECT OF MORPHINE ON PRIMARY SOMATOSENSORY EVOKED RESPONSES IN THE RAT CEREBRAL CORTEX. 121281 02-04  
EFFECT OF SEDUXEN ON THE FUNCTIONAL STATE OF THE ADRENAL CORTEX AND THYROID GLAND. 125265 02-04
- CORTICAL**  
EFFECT OF MELANOCYTE STIMULATING HORMONE ON THE CORTICAL SOMATIC EVOKED RESPONSES IN MAN. 121280 02-13  
CONVULSIVE PROPERTIES OF D-TUBOCURARINE AND CORTICAL INHIBITION. 125673 02-03  
THE EFFECT OF L-DOPA ON CORTICAL AND SUBCORTICAL ELECTRICAL ACTIVITY IN NORMAL UNRESTRAINED RATS. 133294 02-03
- CORTICES**  
EFFECTS OF SOME ANALGESICS AND ANTIDEPRESSANTS ON THE NA<sub>1</sub> AND K<sub>1</sub> ADENOSINE TRIPHOSPHATASE FROM CORTICES OF BRAIN AND KIDNEY. 121668 02-13
- CORTICOSPINAL**  
EFFECT OF NONINHALATION NARCOTICS ON STIMULATION TRANSMISSION IN THE CORTICOSPINAL SYSTEM. 125261 02-03
- CRANIAL**  
THE USE OF PYRACETAM IN SUBJECTIVE SYNDROMES CAUSED BY CRANIAL TRAUMA OBSERVED IN THE PSYCHIATRIC SERVICE OF A GENERAL HOSPITAL. 121855 02-11
- CRAYFISH**  
THE EFFECT OF DIMORPHOLAMINE ON CRAYFISH NEUROMUSCULAR JUNCTION. 132679 02-03
- CREATIVE**  
JULIUS AXELROD: A TRIUMPH FOR CREATIVE RESEARCH. 133098 02-17
- CRITERIA**  
PART 2. IMPROVEMENT CRITERIA IN DRUG TRIALS WITH NEUROTIC PATIENTS. 121406 02-10
- CROCODILIAN**  
THE EEG AND BEHAVIORAL CONTINUUM OF THE CROCODILIAN CAIMAN-SCLEROPS. 2. EEG AND EMG SPIKE ACTIVITY. 124225 02-03
- CROSS**  
PREDICTION OF RESPONSE TO PHENOTHIAZINES IN SCHIZOPHRENIA: A CROSS VALIDATION STUDY. 120698 02-08  
PREDICTION OF PSYCHIATRIC HOSPITALIZATION: II. THE HOSPITALIZATION PRONENESS SCALE: A CROSS VALIDATION. 134204 02-08
- CROSS-TOLERANCE**  
DELTA9-TETRAHYDROCANNABINOL AND ETHYL-ALCOHOL: EVIDENCE FOR CROSS-TOLERANCE IN THE RAT. 122078 02-04
- CROSSED**  
EFFECTS OF GAMMA-HYDROXYBUTYRATE ON CHICK BEHAVIOUR, ELECTROCORTICAL ACTIVITY AND CROSSED EXTENSOR REFLEXES. 120124 02-05
- CROSSING**  
EFFECTS OF INTERTRIAL CROSSING PUNISHMENT AND D-AMPHETAMINE SULFATE ON AVOIDANCE AND ACTIVITY IN FOUR SELECTIVELY BRED RAT STRAINS. 131293 02-04
- CROSSOVER**  
LITHIUM AND CHLORPROMAZINE: A CONTROLLED CROSSOVER STUDY OF HYPERACTIVE SEVERELY DISTURBED YOUNG CHILDREN. 131003 02-11
- CSF**  
MECHANISMS FOR THE EFFLUX OF 14C-DOPA AND 14C-DOPAMINE FROM THE CSF OF RHESUS MONKEYS. 118853 02-03  
THE EFFECTS OF ELECTROSHOCK THERAPY, LITHIUM AND TRICYCLIC ANTIDEPRESSANT TREATMENT ON PROBENECID INDUCED ACCUMULATIONS OF CSF AMINE METABOLITES IN DEPRESSED PATIENTS. (UNPUBLISHED PAPER). 125200 02-09
- CULTURE**  
MARIJUANA EFFECTS ON NEURONS IN TISSUE CULTURE. 133943 02-03
- CULTURES**  
LACK OF TOXIC EFFECT OF GUANETHIDINE ON NERVE CELLS AND SMALL INTENSELY FLUORESCENT CELLS IN CULTURES OF SYMPATHETIC GANGLIA OF NEWBORN RATS. 132656 02-03
- CUMULATIVE**  
MARIJUANA: ACUTE, CUMULATIVE, AND THERAPEUTIC EFFECTS. (UNPUBLISHED PAPER). 127418 02-13
- CURATIVE**  
LITHIUM SALTS IN PSYCHIATRIC THERAPY: CONCERNING THE CURATIVE AND PREVENTIVE TREATMENT. 122315 02-09
- CURE-ALL**  
THE CURE-ALL FALLACY: DANGERS OF OVER PRESCRIBING. 132623 02-17
- CYANAMIDE**  
THE CHANGE OF BEHAVIOR PATTERN OF ALCOHOL ADDICTS TREATED WITH CYANAMIDE DOUBLE MEDICATION - OBSERVATIONS BY THEIR FAMILIES. 129088 02-11
- CYCLIC**  
THE EFFECTS OF PROPRANOLOL AND ELECTRICAL STIMULATION ON THE CYCLIC 3,5 AMP CONTENT OF ISOLATED CEREBRAL TISSUE. 122357 02-03
- CYCLIC-AMP**  
ACTIVATION AND INHIBITION OF LIPOLYSIS IN ISOLATED FAT CELLS BY VARIOUS INHIBITORS OF CYCLIC-AMP PHOSPHODIESTERASE. 124170 02-03  
ENHANCED RELEASE OF DOPAMINE-BETA-HYDROXYLASE AND NOREPINEPHRINE FROM SYMPATHETIC NERVES BY DIBUTYRYL CYCLIC-AMP AND THEOPHYLLINE. (UNPUBLISHED PAPER). 132369 02-03  
CYCLIC-AMP IN BRAIN AREAS: EFFECTS OF AMPHETAMINE AND NOREPINEPHRINE ASSESSED THROUGH THE USE OF MICROWAVE RADIATION AS A MEANS OF TISSUE FIXATION. 133713 02-03
- CYCLIZATION**  
CYCLIZATION OF THREE N-OMEGA-HALOALKYL-N-METHYLAMINOACETOXYLIDIDE DERIVATIVES IN RELATION TO THEIR LOCAL ANESTHETIC EFFECT IN VITRO AND IN VIVO. 122182 02-03
- CYCLOHEXIMIDE**  
INCREASED HEPATIC PHOSPHOPROTEIN PHOSPHATASE ACTIVITY INDUCED BY PHENOBARBITAL AND ITS SUPPRESSION BY CYCLOHEXIMIDE AND SKF-525-A. 121647 02-05  
INTERACTION OF HOUSING CONDITIONS AND CYCLOHEXIMIDE ON MEMORY FORMATION. 131448 02-04
- CYTOCHROME-P-450**  
DESTRUCTION OF CYTOCHROME-P-450 BY SECobarbital AND OTHER BARBITURATES CONTAINING ALLYL GROUPS. 121551 02-03  
OXIDATION AND GLUCURONIDATION OF CERTAIN DRUGS IN VARIOUS SUBCELLULAR FRACTIONS OF RAT LIVER: BINDING OF DESMETHYLIMIPRAMINE AND HEXOBARBITAL TO CYTOCHROME-P-450 AND OXIDATION AND GLUCURONIDATION OF DESMETHYLIMIPRAMINE, AMINOPYRINE, P-NITROPHENOL AND 1-NAPHTHOL. 124120 02-03
- CYTOGENETICS**  
LSD TERATOGENICITY AND CYTOGENETICS. 121212 02-15



# Subject Index

# Psychopharmacology Abstracts

## CYTOSOLASMIC

DECREASE OF RIBONUCLEASE ACTIVITY OF ISOLATED RAT LIVER CYTOSOLASMIC RIBOSOMES AFTER THE PHENOBARBITAL ADMINISTRATION.

121326 02-03

## C14-DELTA9-THC

WHOLE-BODY AUTORADIOGRAPHY OF THE PREGNANT MOUSE AFTER ADMINISTRATION OF C14-DELTA9-THC.

133727 02-03

## D-AMPHETAMINE

THE EFFECTS OF LOW-DOSE COMBINATIONS OF D-AMPHETAMINE AND COCAINE ON EXPERIMENTALLY INDUCED CONFLICT IN THE RAT.

119173 02-04

HYPERTHERMIA IN D-AMPHETAMINE TOXICITY IN AGGREGATED MICE OF DIFFERENT STRAINS.

120364 02-03

INTERACTION OF ANTICHOLINERGIC AGENTS WITH ALPHA-METHYL-P-TYROSINE AND D-AMPHETAMINE.

121306 02-04

INTERACTION OF FENFLURAMINE WITH D-AMPHETAMINE INDUCED EXCITATORY BEHAVIOUR AND HYPERTHERMIA.

122443 02-03

ALTERED METABOLISM OF SEROTONIN IN THE BRAIN OF THE RAT AFTER CHRONIC INGESTION OF D-AMPHETAMINE.

123938 02-03

RELEASE OF BRAIN DOPAMINE AS THE PROBABLE MECHANISM FOR THE HYPOTHERMIC EFFECT OF D-AMPHETAMINE.

128353 02-03

EFFECTS OF INTERTRIAL CROSSING PUNISHMENT AND D-AMPHETAMINE SULFATE ON AVOIDANCE AND ACTIVITY IN FOUR SELECTIVELY BRED RAT STRAINS.

131293 02-04

PERMANENT FACILITATION OF AVOIDANCE BEHAVIOR BY D-AMPHETAMINE AND SCOPOLAMINE.

133377 02-04

## D-DEPRIVATION

ACTIVE AVOIDANCE CONDITIONING: EFFECTS OF D-DEPRIVATION (DESYNCHRONIZED SLEEP DEPRIVATION) AND OF ALTERED BRAIN CATECHOLAMINES.

119832 02-03

## D-TUBOCURARINE

CONVULSIVE PROPERTIES OF D-TUBOCURARINE AND CORTICAL INHIBITION.

125673 02-03

## D-40TA

FURTHER PHARMACOLOGICAL STUDY ON ANTIAGGRESSIVE, SEDATIVE AND MUSCLE RELAXANT 8-CHLORO-6-PHENYL-4H-S-TRIAZOLOBENZODIAZEPINE (D-40TA) IN EXPERIMENTAL ANIMALS: COMPARATIVE STUDY ON POTENCY AND DURATION.

130909 02-04

PHARMACODYNAMIC EFFECTS OF 8-CHLORO-6-PHENYL 4H-S-TRIAZOLOBENZODIAZEPINE (D-40TA), A NEW CENTRAL DEPRESSANT.

131056 02-02

## DA-BETA-HYDROXYLASE

EFFECTS OF A DOPAMINE DA-BETA-HYDROXYLASE INHIBITOR ON TIMING BEHAVIOUR.

120013 02-04

## DAMAGE

PROTECTION BY DESIPRAMINE OF 6-HYDROXYDOPAMINE INDUCED DAMAGE TO ADRENERGIC NERVE TERMINALS IN MOUSE HEART.

122229 02-03

## DANGERS

BIOLOGIC PSYCHIATRY IN PERSPECTIVE: THE DANGERS OF SECTARIANISM IN PSYCHIATRY. V. SOME INFERRED TRENDS.

129401 02-17

THE CURE-ALL FALLACY: DANGERS OF OVER PRESCRIBING.

132623 02-17

## DATA

MORPHOLOGICAL DATA ON THE TOXICITY OF FLUPHENAZINE.

125259 02-05

CLINICAL PSYCHOPHARMACOLOGICAL ASSESSMENT AND LONG-TERM OBSERVATION USING ELECTRONIC DATA PROCESSING.

133482 02-17

## DAY

THE EFFECT OF OXAZEPAM ON INTERRUPTED DAY SLEEP AFTER NIGHT WORK.

132785 02-14

## DAZE

DAZE REACTION: PROLONGED RESPONSE TO PSYCHEDELICS. (UNPUBLISHED PAPER).

125199 02-15

## DEAMINATED

HYPOTHETICAL ROLE OF DEAMINATED METABOLITES OF NORADRENALINE IN PGO SPIKING AND PS.

119392 02-03

THE RESPECTIVE INVOLVEMENT OF NORADRENALINE AND ITS DEAMINATED METABOLITES IN WAKING AND PARADOXICAL SLEEP: A NEUROPHARMACOLOGICAL MODEL.

119683 02-03

## DEATHS

OVERDOSAGE OF TRICYCLIC ANTIDEPRESSANTS: A REPORT OF TWO DEATHS AND A PROSPECTIVE STUDY OF 24 PATIENTS.

121976 02-15

## DECARBOXYLASE

INHIBITION OF CATECHOL-O-METHYLTRANSFERASE BY L-DOPA AND DECARBOXYLASE INHIBITORS.

119304 02-03

EFFECTS OF PERIPHERAL AROMATIC L-AMINO ACIDS DECARBOXYLASE INHIBITOR ON L-(2-14C)-3,4 DIHYDROXYPHENYLALANINE METABOLISM IN MAN.

121301 02-11

CHANGES IN TYROSINE HYDROXYLASE AND DOPA DECARBOXYLASE INDUCED BY PHARMACOLOGICAL AGENTS.

132706 02-03

CEREBRAL AND PERIPHERAL UTILIZATION OF L-DOPA IN PATIENTS WITH PARKINSONISM, DEPRESSIVE OR MANIC SYNDROMES UNDER L-DOPA PERFUSION WITH OR WITHOUT A DECARBOXYLASE INHIBITOR.

133175 02-13

TREATMENT OF PARKINSONS DISEASE WITH L-DOPA AND DECARBOXYLASE INHIBITOR.

133198 02-13

TREMOR INHIBITION IN PARKINSON SYNDROME AFTER APOMORPHINE ADMINISTRATION UNDER L-DOPA AND DECARBOXYLASE INHIBITOR BASIC THERAPY.

133262 02-11

THE ADVANTAGES OF THE COMBINATION TREATMENT (L-DOPA AND DECARBOXYLASE INHIBITOR) IN THE PARKINSON SYNDROME.

133518 02-11

LEVODOPA COMBINED WITH PERIPHERAL DECARBOXYLASE INHIBITION IN PARKINSONS DISEASE.

133807 02-13

## DECARBOXYLATION

INHIBITION OF DOPA DECARBOXYLATION BY RO4-4602, MK-485 AND MK-486 IN HUMAN LIVER HOMOGENATES.

122081 02-03

## DECEREBRATE

RESPIRATORY EFFECTS OF CHLORPROMAZINE IN UNANESTHETIZED DECEREBRATE CATS.

133292 02-03

## DECISIONS

DECISIONS ABOUT DRUG THERAPY II: EXPERT OPINION IN A HYPOTHETICAL SITUATION.

126990 02-17

DECISIONS ABOUT DRUG THERAPY. III. SELECTION OF TREATMENT FOR PSYCHIATRIC INPATIENTS.

131961 02-14

## DECREMENT

EFFECT OF SALICYLATE ON AUDITORY DETECTION THRESHOLDS MEASURED BY CONDITIONED AVOIDANCE RESPONSES: SENSORY IMPAIRMENT OR MOTIVATION DECREMENT

132543 02-03

## DEFICIT

RETROGRADE AMNESIA FOR DISCRIMINATED TASTE AVERSIONS: A MEMORY DEFICIT.

120556 02-04

DESYNCHRONIZED SLEEP DEPRIVATION: LEARNING DEFICIT AND ITS REVERSAL BY INCREASED CATECHOLAMINES.

121361 02-04

THYROID IMPRIMINE CLINICAL AND CHEMICAL INTERACTION: EVIDENCE FOR A RECEPTOR DEFICIT IN DEPRESSION.

127216 02-09

## DEFICITS

DEFICITS IN FEEDING BEHAVIOR AFTER INTRAVENTRICULAR INJECTION OF 6-HYDROXYDOPAMINE IN RATS.

133750 02-03

## DEFORMITIES

LEMB DEFORMITIES ASSOCIATED WITH IMINODIBENZYL HYDROCHLORIDE.

122094 02-15

## DEGENERATION

CHEMICALLY INDUCED DEGENERATION OF INDOLEAMINE-CONTAINING NERVE TERMINALS IN RAT BRAIN.

120813 02-03

STRIATONIGRAL DEGENERATION RESPONSE TO LEVODOPA THERAPY.

122171 02-11

DEGENERATION OF CENTRAL NORADRENALINE NEURONS AFTER 6-HYDROXYDOPAMINE IN NEWBORN ANIMALS.

122225 02-03

## DEGREE

BRAIN CONCENTRATIONS OF LORAZEPAM AND OXAZEPAM AT EQUAL DEGREE OF ANTICONVULSANT ACTIVITY.

119302 02-03

- RELATIVE DEGREE OF TOLERANCE TO MORPHINE SULFATE AND METHADONE HYDROCHLORIDE IN THE RAT AND THE INTERACTION OF DEXAMETHASONE. 133293 02-04
- DEHYDROGENASE**  
ACTIVATION OF BRAIN SUCCINATE DEHYDROGENASE BY LITHIUM. 123663 02-03
- DELAY**  
TOLERANCE TO DELTA9-THC UNDER DELAYED MATCHING-TO-SAMPLE TASKS IN CHIMPANZEES: EFFECTS OF DELAY LENGTH. 131450 02-04
- DELAYED**  
SOME EFFECTS OF (-) DELTA9-TRANS-TETRAHYDROCANNABINOL ON DELAYED MATCHING TO SAMPLE PERFORMANCE IN CHIMPANZEES. (UNPUBLISHED PAPER). 126242 02-04  
THE EFFECTS OF SCOPOLAMINE ON THE DELAYED RECALL OF NUMBERS TESTS. 126745 02-14  
EFFECTS OF DRUGS ON INTERTRIAL INTERVAL BEHAVIOR IN DELAYED ALTERNATION. 131284 02-04  
TOLERANCE TO DELTA9-THC UNDER DELAYED MATCHING-TO-SAMPLE TASKS IN CHIMPANZEES: EFFECTS OF DELAY LENGTH. 131450 02-04
- DELIRIUM**  
DELIRIUM TREMENS: A COMPARISON OF INTRAVENOUS TREATMENT WITH DIAZEPAM AND CHLORDIAZEPOXIDE. 132869 02-11
- DELTA**  
EFFECTS OF ATROPINE ON PERFORMANCE OF AN S(D)-S(DELTA) DISCRIMINATION IN RATS. 120103 02-04
- DELTA1-TETRAHYDROCANNABINOL**  
WATER-SOLUBLE DERIVATIVES OF DELTA1-TETRAHYDROCANNABINOL. 132878 02-06  
A METABOLIC INTERACTION IN VIVO BETWEEN CANNABIDIOL AND DELTA1-TETRAHYDROCANNABINOL. 133741 02-03
- DELTA8-L-TETRAHYDROCANNABINOLS**  
NEUROPHARMACOLOGICAL STUDY OF DELTA9-THC AND DELTA8-L-TETRAHYDROCANNABINOLS IN MONKEYS AND MICE. 120814 02-04
- DELTA9-TETRAHYDROCANNABINOL**  
EFFECT OF DELTA9-TETRAHYDROCANNABINOL ON MITOCHONDRIAL PROCESSES. 119054 02-03  
DELTA9-TETRAHYDROCANNABINOL AND ITS METABOLITES IN MONKEY BRAINS. 121318 02-03  
DELTA9-TETRAHYDROCANNABINOL AND ETHYL-ALCOHOL: EVIDENCE FOR CROSS-TOLERANCE IN THE RAT. 122078 02-04  
SHOCK ELICITED FIGHTING AND DELTA9-TETRAHYDROCANNABINOL. 122194 02-04  
ANALGESIC ACTIVITY OF DELTA9-TETRAHYDROCANNABINOL IN THE RAT AND MOUSE. 122200 02-04  
THE INTERACTION OF DELTA9-TETRAHYDROCANNABINOL WITH COMMONLY USED DRUGS. (UNPUBLISHED PAPER). 130524 02-03  
ENHANCEMENT OF SWIMMING PERFORMANCE WITH DELTA9-TETRAHYDROCANNABINOL. 131283 02-04  
DELTA9-TETRAHYDROCANNABINOL: TEMPORAL CORRELATION OF THE PSYCHOLOGIC EFFECTS AND BLOOD LEVELS AFTER VARIOUS ROUTES OF ADMINISTRATION. 131610 02-14  
BIPHASIC EFFECTS OF DELTA9-TETRAHYDROCANNABINOL ON VARIABLE INTERVAL SCHEDULE PERFORMANCE IN RATS. (UNPUBLISHED PAPER) 133171 02-04  
DELTA9-TETRAHYDROCANNABINOL USED AS DISCRIMINATIVE STIMULUS FOR RATS IN POSITION LEARNING IN A T-SHAPED WATER MAZE. 133547 02-04
- DELTA9-THC**  
NEUROPHARMACOLOGICAL STUDY OF DELTA9-THC AND DELTA8-L-TETRAHYDROCANNABINOLS IN MONKEYS AND MICE. 120814 02-04  
SOME PHARMACOLOGICAL EFFECTS OF PHENITRONE AND ITS INTERACTION WITH DELTA9-THC. 122242 02-04  
TOLERANCE TO DELTA9-THC UNDER DELAYED MATCHING-TO-SAMPLE TASKS IN CHIMPANZEES: EFFECTS OF DELAY LENGTH. 131450 02-04
- DELTA9-TRANS-TETRAHYDROCANNABINOL**  
THE BEHAVIOR OF WORKER AND NON-WORKER RATS UNDER THE INFLUENCE OF (-)DELTA9-TRANS-TETRAHYDROCANNABINOL, CHLOROPROMAZINE AND AMYLOBARBITONE. 119981 02-04  
CERTAIN OBSERVATIONS ON INTERRELATIONSHIPS BETWEEN RESPIRATORY AND CARDIOVASCULAR EFFECTS OF (-) DELTA9-TRANS-TETRAHYDROCANNABINOL. 122394 02-05  
COMPARISON OF BEHAVIORAL EFFECTS OF SYNTHETIC (-)DELTA9-TRANS-TETRAHYDROCANNABINOL AND MARIJUANA EXTRACT DISTILLATE IN CHIMPANZEES. 122398 02-04  
SOME EFFECTS OF (-) DELTA9-TRANS-TETRAHYDROCANNABINOL ON DELAYED MATCHING TO SAMPLE PERFORMANCE IN CHIMPANZEES. (UNPUBLISHED PAPER). 126242 02-04
- DENSITY**  
THE DENSITY AND ULTRASTRUCTURE OF THE PURKINJE CELLS FOLLOWING DIPHENYLHYDANTOIN TREATMENT IN ANIMALS AND MAN. 119002 02-03  
EFFECTS OF ANTIHISTAMINIC AGENTS UPON THE ELECTROGRAPHIC ACTIVITY OF THE CAT BRAIN: A POWER SPECTRAL DENSITY STUDY. 132686 02-03
- DEOXYRIBONUCLEIC**  
PHENOBARBITAL MEDIATED INCREASE IN RING AND N-HYDROXYLATION OF THE CARCINOGEN N-2-FLUORENYLACETAMIDE, AND DECREASE IN AMOUNTS BOUND TO LIVER DEOXYRIBONUCLEIC ACID. 121265 02-03
- DEPENDENCE**  
PHOBIC ANXIETY SYNDROME COMPLICATED BY DRUG DEPENDENCE AND ADDICTION. 122663 02-10  
FIELD DEPENDENCE IN MANIC-DEPRESSIVE PATIENTS. 125967 02-09  
INHALATION INDUCED TOLERANCE AND PHYSICAL DEPENDENCE: THE HAZARD OF OPIATE SUFFUSED MARIJUANA. 127693 02-03  
BAIT SHYNESS DURING MORPHINE DEPENDENCE. 131447 02-04
- DEPENDENCY**  
AN OBSERVATION OF OXAZEPAM DEPENDENCY. 121596 02-10
- DEPENDENT**  
THE ROLE OF METABOLISM IN TEMPERATURE DEPENDENT SUPERSENSITIVITY OF GUINEA-PIG ATRIA TO SYMPATHOMIMETIC AMINES. 120235 02-03  
FURTHER CHARACTERIZATION OF A REDUCED NICOTINAMIDE ADENINE DINUCLEOTIDE PHOSPHATE DEPENDENT ALDEHYDE REDUCTASE FROM BOVINE BRAIN: INHIBITION BY PHENOTHIAZINE DERIVATIVES. 121634 02-03  
TIME DEPENDENT CHANGES IN BRAIN 3H-NOREPINEPHRINE DISAPPEARANCE CAUSED BY L-DOPA ADMINISTRATION. 122170 02-03  
1. SCHEDULE DEPENDENT EFFECTS: EFFECTS OF DRUGS, AND MAINTENANCE OF RESPONDING WITH RESPONSE PRODUCED ELECTRIC SHOCKS. 127213 02-04  
AGGRESSIVE BEHAVIOUR INDUCED BY MARIJUANA COMPOUNDS AND AMPHETAMINE IN RATS PREVIOUSLY MADE DEPENDENT ON MORPHINE. 133522 02-04
- DEPERSONALIZATION**  
DEPERSONALIZATION AND THE USE OF LSD: A PSYCHODYNAMIC STUDY. 121726 02-12
- DEPLETION**  
THE INFLUENCE OF SEMICARBAZIDE INDUCED DEPLETION OF GAMMA-AMINOBUTYRIC ACID ON PRESYNAPTIC INHIBITION. 121963 02-03  
ADRENALINE OR PERIPHERAL NORADRENALINE DEPLETION AND PASSIVE AVOIDANCE IN THE RAT. 122059 02-03  
BRAIN STEM SEROTONIN DEPLETION AND PONTO-GENICULO-OCCIPITAL WAVE ACTIVITY IN THE CAT TREATED WITH RESERPINE. 132684 02-03
- DEPOT**  
COMPARISON OF PERPHENAZINE (TRILAFON TABLETS) WITH PERPHENAZINE ENANTHATE (TRILAFON DEPOT INJECTION) IN A DOUBLE-BLIND TRIAL. 133351 02-08  
DEPOT PHENOTHIAZINE TREATMENT IN ACUTE PSYCHOSIS: A SEQUENTIAL COMPARATIVE STUDY. 134112 02-09

## Subject Index

### DEPRESSANT

STRUCTURE-ACTIVITY RELATIONSHIP OF S-TRIAZOLOBENZODIAZEPINES IN CENTRAL NERVOUS DEPRESSANT ACTION. 130910 02-03

PHARMACODYNAMIC EFFECTS OF 8-CHLORO-6-PHENYL 4H-S-TRIAZOLOBENZODIAZEPINE (D-40TA), A NEW CENTRAL DEPRESSANT. 131056 02-02

### DEPRESSANTS

EFFECT OF CENTRAL STIMULANTS AND DEPRESSANTS ON MOUSE BRAIN ACETYLCHOLINE AND CHOLINE LEVELS. 120232 02-03

DRUG IDENTIFICATION, PROPERTIES AND CHARACTERISTICS: NARCOTICS, STIMULANTS, DEPRESSANTS, MARIJUANA AND HALLUCINOGENS. 122148 02-03

### DEPRESSED

METHYLPHENIDATE IN MILDLY DEPRESSED OUTPATIENTS. 119035 02-10

DOXEPIN AND AMITRIPTYLINE PERPHENAZINE IN MIXED ANXIOUS DEPRESSED NEUROTIC OUTPATIENTS: A COLLABORATIVE CONTROLLED STUDY. 123933 02-10

THE EFFECTS OF ELECTROSHOCK THERAPY, LITHIUM AND TRICYCLIC ANTIDEPRESSANT TREATMENT ON PROBENECID INDUCED ACCUMULATIONS OF CSF AMINE METABOLITES IN DEPRESSED PATIENTS. (UNPUBLISHED PAPER). 125200 02-09

CATECHOLAMINE METABOLISM IN AFFECTIVE DISORDERS - IV. PRELIMINARY STUDIES OF NOREPINEPHRINE METABOLISM IN DEPRESSED PATIENTS TREATED WITH AMITRIPTYLINE. 127215 02-09

A DOUBLE-BLIND SEQUENTIAL COMPARISON OF DOXEPIN WITH AMITRIPTYLINE IN DEPRESSED PATIENTS. 131344 02-09

THE EFFECT OF AMITRIPTYLINE MEDICATION ON DEPRESSED DIABETIC PATIENTS. 131814 02-13

CLINICAL TRIAL OF AMOXAPINE (CL-67772) WITH DEPRESSED PATIENTS. 132895 02-07

A PILOT STUDY OF AMOXAPINE (CL-67772) IN DEPRESSED INPATIENTS. 132951 02-07

BEHAVIORAL AND METABOLIC EFFECTS OF L-TRYPTOPHAN IN UNIPOLAR DEPRESSED PATIENTS. (UNPUBLISHED PAPER) 132989 02-09

THE EFFECT OF BC 105 ON THE DEPRESSED MOOD IN MIGRAINE. 134559 02-10

EFFECTS OF TWO ANTIDEPRESSANTS UPON CONCEPT LEARNING: PSYCHOPHYSIOLOGICAL PARAMETERS IN DEPRESSED HUMANS. 134850 02-08

### DEPRESSION

HOW THEY'RE USING MONKEYS TO STUDY DEPRESSION. 119464 02-04

CHLOROQUINE INDUCED DEPRESSION OF NEUROMUSCULAR TRANSMISSION. 120233 02-03

HORMONAL POTENTIATION OF IMIPRAMINE AND ECT IN PRIMARY DEPRESSION. 120267 02-09

BIOCHEMISTRY OF DEPRESSION (A REVIEW OF THE LITERATURE). 120821 02-13

DEPRESSION AND MHPG EXCRETION. 120993 02-13

THYROID FUNCTION AND THE RESPONSE TO LIOTHYRONINE IN DEPRESSION. 120994 02-13

MANAGEMENT OF DEPRESSION. 121255 02-17

A CLINICAL STUDY OF LIMBITROL IN THE TREATMENT OF ANXIETY/DEPRESSION IN GENERAL PRACTICE. 121309 02-10

THE BLACK CLOUD: THE RECOGNITION AND TREATMENT OF ENDOGENOUS DEPRESSION IN GENERAL PRACTICE. 122095 02-17

DEPRESSION OF SPONTANEOUS ACTIVITY IN GOLDFISH BY MAGNESIUM PEMOLINE. 122957 02-04

ROLE OF ANTIDEPRESSANTS AND NEUROLEPTICS IN THE TREATMENT OF DEPRESSION. 122976 02-09

CLINICAL AND ELECTROENCEPHALOGRAPHIC EFFECTS OF ANAFRANIL TREATMENT IN DEPRESSION. 123884 02-13

MASKED DEPRESSION IN INTERNAL MEDICINE - THE FREQUENCY AND CLINICAL CHARACTERISTICS. 125862 02-09

MASKED DEPRESSION IN OBSTETRICS AND GYNECOLOGY. 125864 02-09

## Psychopharmacology Abstracts

TYPES OF ORAL CONTRACEPTIVES, DEPRESSION, AND PREMENSTRUAL SYMPTOMS. 125961 02-14

HISTORY OF DEPRESSION AS A RISK FACTOR FOR DEPRESSION WITH ORAL CONTRACEPTIVES AND DISCONTINUANCE. 125962 02-14

RELATIONSHIP OF PATIENT BACKGROUND CHARACTERISTICS TO EFFICACY OF PHARMACOTHERAPY IN DEPRESSION. 125968 02-10

MASKED DEPRESSION IN VARIOUS FIELDS IN CLINICAL MEDICINE - FROM THE STANDPOINT IN INTERNAL MEDICINE ESPECIALLY IN THE FIELDS OF TREATMENT. 125999 02-09

THYROID IMIPRAMINE CLINICAL AND CHEMICAL INTERACTION: EVIDENCE FOR A RECEPTOR DEFICIT IN DEPRESSION. 127216 02-09

THE EFFECT OF THE AMITRIPTYLINE ON THE MASKED DEPRESSION - COMPARATIVE DOUBLE-BLIND CONTROLLED STUDY. 129737 02-09

DEPRESSION BY AMANTADINE OF DRUG-INDUCED RIGIDITY IN THE RAT. 132681 02-03

THE USE OF A FIXED DOSAGE COMBINATION OF AMITRIPTYLINE AND CHLORDIAZEPOXIDE IN THE TREATMENT OF PATIENTS SUFFERING FROM ANXIETY AND DEPRESSION. 132754 02-09

MOTIVATION IN THE TREATMENT OF ANXIOUS DEPRESSION. 132955 02-07

USING HORMONE TO LIFT DEPRESSION. 133152 02-09

DRUGS IN THE TREATMENT OF DEPRESSION. 133963 02-09

### DEPRESSIONS

TREATMENT OF PREVIOUSLY INTRACTABLE DEPRESSIONS WITH TRANCYPRIMINE AND LITHIUM. 125969 02-09

DRUG THERAPY OF CLINICAL DEPRESSIONS - CURRENT STATUS AND IMPLICATIONS FOR RESEARCH ON NEUROPHARMACOLOGY OF THE AFFECTIVE DISORDERS. 127220 02-09

TREATMENT OF DEPRESSIONS WITH CHLORIMIPRAMINE: LITERATURE REVIEW AND CLINICAL STUDIES. 133315 02-07

### DEPRESSIVE

CATECHOLAMINE METABOLISM, DEPRESSIVE ILLNESS AND DRUG RESPONSE. 120992 02-13

A DOUBLE-BLIND INVESTIGATION OF A NEW SOPORIFIC DRUG FOR USE WITH DEPRESSIVE PATIENTS. 121599 02-10

N-PHENYL-N-BENZYL-4-AMINO-1-METHYLPYPERIDIN HCL (BAMIPINE) COMBINED WITH 1-CYCLOHEXYL-1-METHYL 2 METHYLAMINOETHANE (CHP) FOR THE INTERIM AND TERMINAL TREATMENT OF DEPRESSIVE SYNDROMES. 122296 02-07

THE SYNACTHEN TEST IN DEPRESSIVE ILLNESS. 132870 02-13

CEREBRAL AND PERIPHERAL UTILIZATION OF L-DOPA IN PATIENTS WITH PARKINSONISM, DEPRESSIVE OR MANIC SYNDROMES UNDER L-DOPA PERFUSION WITH OR WITHOUT A DECARBOXYLASE INHIBITOR. 133175 02-13

### DEPRESSIVES

PREDICTORS OF AMITRIPTYLINE RESPONSE IN OUTPATIENT DEPRESSIVES. 122426 02-14

### DEPRIVATION

EFFECTS OF DEXTROAMPHETAMINE FOLLOWING DESYNCHRONIZED SLEEP DEPRIVATION IN RATS. 119830 02-03

ACTIVE AVOIDANCE CONDITIONING: EFFECTS OF D-DEPRIVATION (DESYNCHRONIZED SLEEP DEPRIVATION) AND OF ALTERED BRAIN CATECHOLAMINES. 119832 02-03

DESYNCHRONIZED SLEEP DEPRIVATION: LEARNING DEFICIT AND ITS REVERSAL BY INCREASED CATECHOLAMINES. 121361 02-04

EFFECTS OF BARBITAL ON DEPRIVATION INDUCED WATER CONSUMPTION BY RATS. 122033 02-04

### DERIVATIVE

NARCOSIS IN ELECTROSHOCK WITH A DERIVATIVE OF FENCICLIDINE. 132988 02-13

TEMPERATURE INCREASES AND BLOOD PROTEIN CHANGES WITH NEUROLEPTICS: WITH SPECIAL CONSIDERATION OF THE NEW DIBENZODIAZEPINE DERIVATIVE, CLOZAPINE. 133350 02-15

## DERIVATIVES

- CENTRAL ACTIONS OF 6-HYDROXYDOPAMINE AND OTHER PHENYLETHYLAMINE DERIVATIVES ON BODY TEMPERATURE IN THE RAT. 120362 02-03
- THE EFFECTS OF SOME TRYPTAMINE DERIVATIVES ON BRAIN MONOAMINES AND THEIR PRECURSOR AMINO ACIDS. 121279 02-03
- THE EFFECTS OF METHYLATED TRYPTAMINE DERIVATIVES ON BRAINSTEM NEURONES. 121307 02-12
- FURTHER CHARACTERIZATION OF A REDUCED NICOTINAMIDE ADENINE DINUCLEOTIDE PHOSPHATE DEPENDENT ALDEHYDE REDUCTASE FROM BOVINE BRAIN: INHIBITION BY PHENOTHIAZINE DERIVATIVES. 121634 02-03
- EFFECT OF AMINAZINE AND IMISINE ON METABOLISM OF DICARBOXYLIC AMINO ACIDS AND THEIR DERIVATIVES (GLUTAMINE AND GAMMA-AMINOBUTYRIC ACID) IN CAT BRAIN. 121876 02-03
- CYCLIZATION OF THREE N-OMEGA-HALOALKYL-N-METHYLAMINOACETOXYLIDIDE DERIVATIVES IN RELATION TO THEIR LOCAL ANESTHETIC EFFECT IN VITRO AND IN VIVO. 122182 02-03
- BEHAVIOURAL AND BIOCHEMICAL COMPARISON OF AMPHETAMINE DERIVATIVES, COCAINE, BENZTROPINE, AND TRICYCLIC ANTIDEPRESSANT DRUGS. 122571 02-03
- WATER-SOLUBLE DERIVATIVES OF DELTA1-TETRAHYDROCANNABINOL. 132878 02-06
- SOME BENZOFURAN CARBOXAMIDE DERIVATIVES WITH NARCOTIC AND ANALGESIC ACTIVITY. 133216 02-02
- THE HEMOLYTIC EFFECT OF SOME PHENOTHIAZINE DERIVATIVES IN VITRO AND IN VIVO. 133307 02-13
- THE EFFECTS OF SOME PHENOTHIAZINE DERIVATIVES ON THE BEHAVIOR OF WILD HERRING GULLS. (LARUS A. ARGENTATUS PONTOPP). 133381 02-04
- A NEUROLOGICAL ANALYSIS OF THE ACTION OF TRANQUILLIZER DERIVATIVES OF BENZODIAZEPINE. 133506 02-13
- DESCENDING**
- EFFECT OF NEUROTROPIC AGENTS ON CHANGES IN BIOELECTRIC ACTIVITY OF THE RENAL NERVE, EVOKED BY STIMULATION OF THE DESCENDING COLUMNS OF THE SPINAL CORD. 125262 02-03
- DESENSITIZATION**
- INTRAVENOUS DIAZEPAM FOR FACILITATING RELAXATION FOR DESENSITIZATION. 121397 02-10
- DESIPRAMINE**
- PROTECTION BY DESIPRAMINE OF 6-HYDROXYDOPAMINE INDUCED DAMAGE TO ADRENERGIC NERVE TERMINALS IN MOUSE HEART. 122229 02-03
- DESMETHYLIMIPRAMINE**
- OXIDATION AND GLUCURONIDATION OF CERTAIN DRUGS IN VARIOUS SUBCELLULAR FRACTIONS OF RAT LIVER: BINDING OF DESMETHYLIMIPRAMINE AND HEXOBARBITAL TO CYTOCHROME-P-450 AND OXIDATION AND GLUCURONIDATION OF DESMETHYLIMIPRAMINE, AMINOPYRINE, P-NITROPHENOL AND 1-NAPHTHOL. 124120 02-03
- THE INTERACTION BETWEEN DESMETHYLIMIPRAMINE AND GUANETHIDINE ON THE RABBIT ILEUM. THE IMPORTANCE OF THE NORADRENALINE UPTAKE PROCESS IN THE REVERSAL OF GUANETHIDINE INDUCED ADRENERGIC NEURONE BLOCKADE. 133214 02-03
- DESTRUCTION**
- INSOMNIA AND CEREBRAL METABOLISM OF SEROTONIN IN CAT: IN VITRO SYNTHESIS AND RELEASE OF SEROTONIN 18 H AFTER DESTRUCTION OF THE RAPHE NUCLEI. 119684 02-03
- DESTRUCTION OF CYTOCHROME-P-450 BY SECOBARBITAL AND OTHER BARBITURATES CONTAINING ALLYL GROUPS. 121551 02-03
- DESYNCHRONIZED**
- EFFECTS OF DEXTROAMPHETAMINE FOLLOWING DESYNCHRONIZED SLEEP DEPRIVATION IN RATS. 119830 02-03
- ACTIVE AVOIDANCE CONDITIONING: EFFECTS OF D-DEPRIVATION (DESYNCHRONIZED SLEEP DEPRIVATION) AND OF ALTERED BRAIN CATECHOLAMINES. 119832 02-03
- DESYNCHRONIZED SLEEP DEPRIVATION: LEARNING DEFICIT AND ITS REVERSAL BY INCREASED CATECHOLAMINES. 121361 02-04

## DETECTED

- ON THE ADMINISTRATION OF PSYCHOTROPIC DRUGS AND ITS SIDE-EFFECTS DETECTED BY LIVER FUNCTION TEST. 128952 02-08
- DETECTING**
- IN VITRO METHODS OF DETECTING DRUG HYPERSENSITIVITY. 132995 02-15
- DETECTION**
- BROMINATION OF PHENOTHIAZINE TRANQUILLIZERS: A METHOD FOR SENSITIVE AND SPECIFIC DETECTION. 119053 02-06
- AUDITORY SIGNAL DETECTION IN SCHIZOPHRENICS. 120081 02-14
- AUDITORY SIGNAL DETECTION IN PARANOID AND NONPARANOID SCHIZOPHRENICS. 129838 02-08
- EFFECT OF SALICYLATE ON AUDITORY DETECTION THRESHOLDS MEASURED BY CONDITIONED AVOIDANCE RESPONSES: SENSORY IMPAIRMENT OR MOTIVATION DECREMENT 132543 02-03
- DETERMINATION**
- BLOOD LEVELS OF ANTIEPILEPTIC DRUGS - CHEMICAL DETERMINATION OF ANTIEPILEPTIC DRUGS IN BODY FLUIDS. 129211 02-06
- IMPORTANCE OF ADEQUATE DOSAGE DETERMINATION OF DRUG EFFICACY. TRIAL OF A NEW BUTYROPHENONE COMPOUND ON ACUTE SCHIZOPHRENICS. 133263 02-07
- OPIUM ALKALOIDS XII: QUANTITATIVE DETERMINATION OF MORPHINE IN OPIUM BY ISOTOPE DILUTION. 133744 02-06
- DETERRENT**
- THE USE OF ANTABUSE AS A DETERRENT TO ALCOHOLISM. 124068 02-11
- DEVELOPING**
- THE ONTOGENY OF 14C-DOPAMINE CLEARANCE FROM THE CEREBRAL VENTRICLES OF DEVELOPING RHEMUS MONKEYS. 120218 02-03
- STRUCTURAL AND ULTRASTRUCTURAL CHANGES IN DEVELOPING SYMPATHETIC GANGLIA INDUCED BY GUANETHIDINE. 132645 02-03
- DEVELOPMENT**
- UPTAKE AND UTILIZATION OF 3H-5-HYDROXYTRYPTOPHAN BY BRAIN TISSUE DURING DEVELOPMENT. 121278 02-03
- THE DEVELOPMENT OF FIXED-RATIO PERFORMANCE UNDER THE INFLUENCE OF RIBONUCLEIC ACID. 129423 02-04
- DEVELOPMENT OF METHODOLOGY FOR ASSAY OF CANNABINOIDS IN BODY FLUIDS AND TISSUES. (UNPUBLISHED PAPER). 132370 02-06
- DEVELOPMENT OF BEHAVIOURAL TOLERANCE TO NICOTINE IN THE RAT. 133524 02-04
- BRAIN BIOCHEMICAL CHANGES IN RATS TREATED WITH CHLORPROMAZINE AND ELECTROSHOCKED DURING EARLY POSTNATAL DEVELOPMENT. 133708 02-03
- DEXAMETHASONE**
- RELATIVE DEGREE OF TOLERANCE TO MORPHINE SULFATE AND METHADONE HYDROCHLORIDE IN THE RAT AND THE INTERACTION OF DEXAMETHASONE. 133293 02-04
- DEXTROAMPHETAMINE**
- ANOREXIGENIC ACTIVITY OF INTERMITTENT DEXTROAMPHETAMINE WITH AND WITHOUT MEPROBAMATE. 119169 02-13
- EFFECTS OF DEXTROAMPHETAMINE FOLLOWING DESYNCHRONIZED SLEEP DEPRIVATION IN RATS. 119830 02-03
- EFFECTS OF IMIPRAMINE AND DEXTROAMPHETAMINE ON BEHAVIOR OF NEUROPSYCHIATRICALY IMPAIRED CHILDREN. 121449 02-14
- EFFECTS OF DEXTROAMPHETAMINE, CHLORPROMAZINE, AND HYDROXYZINE ON BEHAVIOR AND PERFORMANCE IN HYPERACTIVE CHILDREN. 129494 02-11
- LEVOAMPHETAMINE AND DEXTROAMPHETAMINE: COMPARATIVE EFFICACY IN THE HYPERKINETIC SYNDROME: ASSESSMENT BY TARGET SYMPTOMS. 129834 02-14
- DFP**
- EFFECT OF DIISOPROPYL PHOSPHOROFUORIDATE (DFP) ON THE SOMATOSENSORY EVOKED POTENTIALS IN RATS. 133380 02-04
- DIABETIC**
- THE EFFECT OF AMITRIPTYLINE MEDICATION ON DEPRESSED DIABETIC PATIENTS. 131814 02-13



## Subject Index

- DIACYLOXYTROPANES**  
ANTITREMORINE EFFECTS OF SOME MONO AND DIACYLOXYTROPANES. 133306 02-02
- DIAGNOSIS**  
ELECTROENCEPHALOGRAPHIC ACTIVATION WITH SLEEP AND METHOHXITAL: COMPARATIVE USEFULNESS IN THE DIAGNOSIS OF EPILEPSY. 122253 02-14
- DIAZEPAM**  
DIAZEPAM SEDATION FOR LIVER BIOPSY. 118965 02-07  
A COMPARATIVE TRIAL OF DOXEPIN AND DIAZEPAM IN ANXIETY STATES. 119984 02-10  
PULMONARY COMPLICATIONS AFTER ESOPHAGOGASTROSCOPY USING DIAZEPAM. 120200 02-15  
DIAZEPAM AND MORPHINE AS PREMEDICATION FOR GASTROINTESTINAL ENDOSCOPY. 120835 02-13  
INTRAVENOUS DIAZEPAM FOR FACILITATING RELAXATION FOR DESENSITIZATION. 121397 02-10  
STUDY OF THE TERATOGENIC POTENTIAL OF DIAZEPAM AND SCH-12041. 121579 02-05  
COMPARATIVE STUDY OF PARENTERAL DOXEPIN AND DIAZEPAM. 121597 02-10  
TONIC STATUS-EPILEPTICUS PRECIPITATED BY INTRAVENOUS DIAZEPAM IN A CHILD WITH PETIT-MAL STATUS. 123629 02-13  
THROMBOPHLEBITIS WITH DIAZEPAM USED INTRAVENOUSLY. 127405 02-15  
ABERRANT RESPONSE TO DIAZEPAM: A NEW SYNDROME. 129967 02-15  
BEHAVIORAL EFFECTS OF PRENATAL ADMINISTRATION OF DIAZEPAM IN THE RAT. 131279 02-04  
DELIRIUM TREMENS: A COMPARISON OF INTRAVENOUS TREATMENT WITH DIAZEPAM AND CHLORDIAZEPOXIDE. 132869 02-11  
CLORAZEPATE DIPOTASSIUM IN ANXIETY: A DOUBLE-BLIND TRIAL WITH DIAZEPAM CONTROLS. 132952 02-07  
EFFECTIVENESS OF DIAZEPAM AND METHYLPHENIDATE IN MULTIPLE DOSAGES IN MODIFYING INFANT TRAUMA EFFECTS. 134104 02-04
- DIAZOXIDE**  
SEVERE POLYDIPSIA AND ANTIURETIC EFFECTS PRODUCED BY DIAZOXIDE. 130382 02-03
- DIBENZODIAZEPINE**  
TEMPERATURE INCREASES AND BLOOD PROTEIN CHANGES WITH NEUROLEPTICS: WITH SPECIAL CONSIDERATION OF THE NEW DIBENZODIAZEPINE DERIVATIVE, CLOZAPINE. 133350 02-15
- DIBUTYRYL**  
ENHANCED RELEASE OF DOPAMINE-BETA-HYDROXYLASE AND NOREPINEPHRINE FROM SYMPATHETIC NERVES BY DIBUTYRYL CYCLIC-AMP AND THEOPHYLLINE. (UNPUBLISHED PAPER). 132369 02-03
- DICARBOXYLIC**  
EFFECT OF AMINAZINE AND IMISINE ON METABOLISM OF DICARBOXYLIC AMINO ACIDS AND THEIR DERIVATIVES (GLUTAMINE AND GAMMA-AMINOBUTYRIC ACID) IN CAT BRAIN. 121876 02-03
- DICOUMAROL**  
METABOLISM OF DICOUMAROL BY LIVER MICROSOMES FROM UNTREATED AND PHENOBARBITAL TREATED RATS. 122169 02-03
- DIET**  
EFFECTIVENESS OF WEIGHT REDUCTION INVOLVING DIET PILLS. 132958 02-11  
MORTALITY RATE IN PATIENTS RECEIVING DIET PILLS. 132959 02-15
- DIETHYLAMIDE**  
REVERSAL LEARNING FACILITATED BY A SINGLE INJECTION OF LYSERGIC ACID DIETHYLAMIDE (LSD-25) IN THE RAT. 121303 02-04  
SOME CLINICAL AND SOCIAL ASPECTS OF LYSERGIC ACID DIETHYLAMIDE: PART I. 121932 02-12  
SUPPRESSION OF LYSERGIC ACID DIETHYLAMIDE (LSD) EFFECTS IN PREGNANT RATS. 124174 02-03  
ACETYLCHOLINE LEVEL IN BRAIN STRUCTURES OF RATS FOLLOWING ADMINISTRATION OF LYSERGIC ACID DIETHYLAMIDE. 125256 02-03  
ACTIVE TRANSPORT OF LYSERGIC ACID DIETHYLAMIDE. 125674 02-03

## Psychopharmacology Abstracts

- INTERACTION OF THE EFFECT OF LYSERGIC ACID DIETHYLAMIDE AND AMINAZINE AT THE LEVEL OF INDIVIDUAL NEURONS OF THE MIDBRAIN RETICULAR FORMATION. 134457 02-03
- DIFFERENCE**  
SPECIES DIFFERENCE IN THE LOWERING OF BRAIN 5-HYDROXYTRYPTAMINE BY M-CHLOROAMPHETAMINE. 119306 02-03
- DIFLUOROAMPHETAMINE**  
DISPOSITION AND BEHAVIORAL EFFECTS OF AMPHETAMINE AND BETA,BETA DIFLUOROAMPHETAMINE IN MICE. 119058 02-04
- DIGESTION**  
DISSOCIATION OF THE BEHAVIOURAL AND ENDOCRINE EFFECTS OF LYSINE VASOPRESSIN BY TRYPTIC DIGESTION. 133753 02-04
- DIGITAL**  
DIGITAL COMPUTER ANALYZED SLEEP ELECTROENCEPHALOGRAPH (SLEEP PRINTS) IN PREDICTING ANXIOLYTIC PROPERTIES OF CLORAZEPATE DIPOTASSIUM (TRANXENE). 132950 02-14
- DIGITALIS**  
SUPPRESSION BY CLONIDINE (ST-155) OF CARDIAC ARRHYTHMIAS INDUCED BY DIGITALIS. 122181 02-03
- DIGOXIN**  
SUICIDAL AND ACCIDENTAL DIGOXIN INGESTION. 121817 02-15
- DIHYDROERGOTAMINE**  
A CONTROLLED STUDY ON THE POSSIBLE EFFECT OF DIHYDROERGOTAMINE AGAINST DRYNESS OF THE MOUTH IN PATIENTS TREATED WITH TRICYCLIC ANTIDEPRESSANTS. 134312 02-13
- DIHYDROXYCHLORPROMAZINE**  
SYNTHESIS OF 7,8 DIHYDROXYCHLORPROMAZINE AND ANALOGS. 123841 02-01
- DIHYDROXYINDOLE**  
5,6 DIHYDROXYINDOLE FORMATION FROM OXIDIZED 6-HYDROXYDOPAMINE. 122237 02-03
- DIHYDROXYPHENYLALANINE**  
EFFECTS OF PERIPHERAL AROMATIC L-AMINO ACIDS DECARBOXYLASE INHIBITOR ON L-(2-14C)-3,4 DIHYDROXYPHENYLALANINE METABOLISM IN MAN. 121301 02-11  
METABOLISM OF 3,4 DIHYDROXYPHENYLALANINE (L-DOPA) IN HUMAN SUBJECTS. 122166 02-13
- DIISOPROPYL**  
EFFECT OF DIISOPROPYL PHOSPHOROFUORIDATE (DFP) ON THE SOMATOSENSORY EVOKED POTENTIALS IN RATS. 133380 02-04
- DILANTIN**  
A 3-O-METHYLATED CATECHOL METABOLITE OF DIPHENYLHYDANTOIN (DILANTIN) IN RAT URINE. 122235 02-03  
DILANTIN, BRAIN ELECTROLYTES, THE SO-CALLED SODIUM PUMP AND SEIZURES. 132528 02-03
- DILUTION**  
OPIUM ALKALOIDS XII: QUANTITATIVE DETERMINATION OF MORPHINE IN OPIUM BY ISOTOPE DILUTION. 133744 02-06
- DIMETHOXY-4-METHYLAMPHETAMINE**  
SOME EFFECTS OF THE HALLUCINOGENIC DRUG 2,5 DIMETHOXY-4-METHYLAMPHETAMINE ON THE METABOLISM OF BIOGENIC AMINES IN THE RAT BRAIN. 121305 02-03
- DIMETHYL-4-PHENYLPIPERAZINIUM**  
PHYSOSTIGMINE AND 1,1 DIMETHYL-4-PHENYLPIPERAZINIUM INDUCED PRESSOR RESPONSES AND CATECHOLAMINE RELEASE IN 6-HYDROXYDOPAMINE TREATED RATS. 120234 02-03
- DIMETHYLTRYPTAMINE**  
THE NORMAL OCCURRENCE OF TRYPTAMINE IN BRAIN AND ITS CONVERSION TO N-METHYL AND N DIMETHYLTRYPTAMINE IN VITRO AND IN VIVO. (UNPUBLISHED PAPER). 126244 02-03  
COMPARISON OF CHLORDIAZEPOXIDE, METHYSERGIDE, AND CINANSERIN AS MODIFIERS OF PUNISHED BEHAVIOR AND AS ANTAGONISTS OF N,N DIMETHYLTRYPTAMINE. 132776 02-04  
XYLAMIDINE TOSYLATE: DIFFERENTIAL ANTAGONISM OF THE HYPOTHERMIC EFFECTS OF N,N DIMETHYLTRYPTAMINE, BUFOTENINE, AND 5-METHOXYTRYPTAMINE. 133528 02-03

- DIMORPHOLAMINE**  
THE EFFECT OF DIMORPHOLAMINE ON CRAYFISH NEUROMUSCULAR JUNCTION. 132679 02-03
- DINUCLEOTIDE**  
FURTHER CHARACTERIZATION OF A REDUCED NICOTINAMIDE ADENINE DINUCLEOTIDE PHOSPHATE DEPENDENT ALDEHYDE REDUCTASE FROM BOVINE BRAIN; INHIBITION BY PHENOTHIAZINE DERIVATIVES. 121634 02-03
- DIPHENYL**  
CENTRAL ANTICHOLINERGIC ACTIVITY OF: 2,2-DIPHENYL 4-(3-AZABICYCLONON-3-YL) BUTYRAMIDE HYDROCHLORIDE (SC-13639). 133303 02-02
- DIPHENYLHYDANTOIN**  
THE DENSITY AND ULTRASTRUCTURE OF THE PURKINJE CELLS FOLLOWING DIPHENYLHYDANTOIN TREATMENT IN ANIMALS AND MAN. 119002 02-03  
A 3-O-METHYLATED CATECHOL METABOLITE OF DIPHENYLHYDANTOIN (DILANTIN) IN RAT URINE. 122235 02-03  
EFFECTS OF DIPHENYLHYDANTOIN AND OTHER ANTIEPILEPTIC DRUGS ON EPILEPTIFORM ACTIVITY AND PURKINJE CELL DISCHARGE RATES. 123632 02-03  
AUGMENTATION OF CEREBELLAR PURKINJE CELL DISCHARGE RATE AFTER DIPHENYLHYDANTOIN. 123633 02-03  
ACUTE EFFECTS OF DIPHENYLHYDANTOIN IN RELATION TO PLASMA LEVELS. 125029 02-13  
THE EFFECT OF DIPHENYLHYDANTOIN ON THE CLINICAL MANIFESTATIONS AND EXCRETION OF 5-HYDROXYINDOLEACETIC ACID IN PARKINSONS DISEASE. 132808 02-11
- DIPHENYLPROPYL-ACETATE**  
EFFECT OF PRETREATMENT WITH SPIRONOLACTONE, PHENOBARBITAL OR BETA-DIETHYLAMINOETHYL DIPHENYLPROPYL-ACETATE (SKF-525-A) ON TRITIUM LEVELS IN BLOOD, HEART AND LIVER OF RATS AT VARIOUS TIMES AFTER ADMINISTRATION OF 3H-DIGITOXIN. 121243 02-03
- DIPOTASSIUM**  
DIGITAL COMPUTER ANALYZED SLEEP ELECTROENCEPHALOGRAPH (SLEEP PRINTS) IN PREDICTING ANXIOLYTIC PROPERTIES OF CLORAZEPATE DIPOTASSIUM (TRANXENE). 132950 02-14  
CLORAZEPATE DIPOTASSIUM IN ANXIETY: A DOUBLE-BLIND TRIAL WITH DIAZEPAM CONTROLS. 132952 02-07  
SOMATOSENSORY EVOKED POTENTIAL: AN OBJECTIVE INDICATOR OF THE THERAPY EFFICACY OF A NEW PSYCHOTROPIC DRUG, CLORAZEPATE DIPOTASSIUM (TRANXENE). 132953 02-07
- DISCHARGE**  
EFFECTS OF DIPHENYLHYDANTOIN AND OTHER ANTIEPILEPTIC DRUGS ON EPILEPTIFORM ACTIVITY AND PURKINJE CELL DISCHARGE RATES. 123632 02-03  
AUGMENTATION OF CEREBELLAR PURKINJE CELL DISCHARGE RATE AFTER DIPHENYLHYDANTOIN. 123633 02-03
- DISCONTINUANCE**  
HISTORY OF DEPRESSION AS A RISK FACTOR FOR DEPRESSION WITH ORAL CONTRACEPTIVES AND DISCONTINUANCE. 125962 02-14
- DISCOVERY**  
QUANTITATIVE PHARMACO-ELECTROENCEPHALOGRAPHY IN THE DISCOVERY OF A NEW GROUP OF PSYCHOTROPIC DRUGS. 130472 02-07  
CLINICAL AND EEG EFFECTS OF GB-94, A TETRACYCLIC ANTIDEPRESSANT (EEG MODEL IN DISCOVERY OF A NEW PSYCHOTROPIC DRUG). 132894 02-07
- DISCRIMINATED**  
RETROGRADE AMNESIA FOR DISCRIMINATED TASTE AVERSIONS: A MEMORY DEFICIT. 120556 02-04
- DISCRIMINATION**  
DISRUPTION OF A TEMPORAL DISCRIMINATION BY THE MINOR TRANQUILIZER, OXAZEPAM. 119982 02-04  
TWENTY-FOUR HOUR PROACTIVE FACILITATION OF AVOIDANCE AND DISCRIMINATION BY PENTYLENETETRAZOL. 120016 02-04  
EFFECTS OF ATROPINE ON PERFORMANCE OF AN S(D)-S(DELTA) DISCRIMINATION IN RATS. 120103 02-04  
EFFECTS OF METHAMPHETAMINE ON WELL-PRACTICED DISCRIMINATION CONDITIONING OF THE EYELID RESPONSE. 122397 02-14
- DRUG EFFECTS ON BASELINE GO/NO-GO DISCRIMINATION AND SERIAL DISCRIMINATION REVERSAL LEARNING.** 131285 02-04
- THE EFFECTS OF A MARIJUANA EXTRACT ON TWO-CHOICE DISCRIMINATION LEARNING IN THE SQUIRREL MONKEY.** 131445 02-04
- EFFECT OF BOL ON THE LSD INDUCED ALTERATION OF FLICKER DISCRIMINATION.** 133655 02-04
- DISCRIMINATIVE**  
DELTA9-TETRAHYDROCANNABINOL USED AS DISCRIMINATIVE STIMULUS FOR RATS IN POSITION LEARNING IN A T-SHAPED WATER MAZE. 133547 02-04
- DISEASE**  
LIVIDO-RETICULARIS IN PARKINSONS DISEASE PATIENTS TREATED WITH AMANTADINE HYDROCHLORIDE. 119028 02-15  
TREATMENT OF PARKINSONS DISEASE WITH AMANTADINE AND L-DOPA. 121175 02-15  
SEROTONERGIC MECHANISMS IN PARKINSONS DISEASE. 122255 02-14  
TREATMENT OF PARKINSONS DISEASE WITH AMANTADINE (SYMMETREL). 130020 02-11  
AMANTADINE IN PARKINSONS DISEASE: REVIEW OF MORE THAN TWO YEARS EXPERIENCE. 131948 02-11  
TREATMENT OF PARKINSONS DISEASE WITH VIREGYT (AMANTADINE HYDROCHLORIDE). 132805 02-07  
THE EFFECT OF DIPHENYLHYDANTOIN ON THE CLINICAL MANIFESTATIONS AND EXCRETION OF 5-HYDROXYINDOLEACETIC ACID IN PARKINSONS DISEASE. 132808 02-11  
A QUALITATIVE AND QUANTITATIVE EVALUATION OF AMANTADINE IN THE TREATMENT OF PARKINSONS DISEASE. 133071 02-11  
TREATMENT OF PARKINSONS DISEASE WITH L-DOPA AND DECARBOXYLASE INHIBITOR. 133198 02-13  
LEVODOPA COMBINED WITH PERIPHERAL DECARBOXYLASE INHIBITION IN PARKINSONS DISEASE. 133807 02-13
- DISORDER**  
THE EFFECTS OF DRUGS ON OBJECTIVE MEASURES OF THOUGHT DISORDER IN SCHIZOPHRENIC PATIENTS. 120120 02-08  
INVOLUNTARY MOVEMENT DISORDER CAUSED BY METHYLDOPA. 120853 02-13  
LITHIUM CARBONATE IN EMOTIONALLY UNSTABLE CHARACTER DISORDER. 126232 02-09
- DISORDERS**  
CEREBROSPINAL FLUID LEVELS OF MHPG IN AFFECTIVE DISORDERS. 124330 02-13  
A CONTROLLED EVALUATION OF LITHIUM PROPHYLAXIS IN AFFECTIVE DISORDERS. 126205 02-09  
CATECHOLAMINE METABOLISM IN AFFECTIVE DISORDERS - IV. PRELIMINARY STUDIES OF NOREPINEPHRINE METABOLISM IN DEPRESSED PATIENTS TREATED WITH AMITRIPTYLINE. 127215 02-09  
DRUG THERAPY OF CLINICAL DEPRESSIONS - CURRENT STATUS AND IMPLICATIONS FOR RESEARCH ON NEUROPHARMACOLOGY OF THE AFFECTIVE DISORDERS. 127220 02-09  
LITHIUM CARBONATE PROPHYLAXIS IN AFFECTIVE DISORDERS. (CLINICAL VERSUS RESEARCH APPLICATIONS). 127880 02-09  
CATECHOLAMINE METABOLISM IN AFFECTIVE DISORDERS: A LONGITUDINAL STUDY OF A PATIENT TREATED WITH AMITRIPTYLINE AND ECT. 130109 02-09  
BEHAVIOR OF BIOPHYSICAL BLOOD PROPERTIES IN CHILDREN WITH MENTAL DISORDERS RECEIVING CHLORPROMAZINE TREATMENT. 133076 02-03  
LITHIUM IN TREATMENT AND PREVENTION OF AFFECTIVE DISORDERS. 133094 02-09  
THE ELECTRIC INTERPHASIC BLOOD POTENTIAL FOR SODIUM AND POTASSIUM IONS IN PATIENTS TREATED WITH CHLORPROMAZINE FOR VARIOUS MENTAL DISORDERS. 133463 02-13
- DISPOSITION**  
DISPOSITION AND BEHAVIORAL EFFECTS OF AMPHETAMINE AND BETA,BETA-DIFLUOROAMPHETAMINE IN MICE. 119058 02-04

# Subject Index

- PHYSIOLOGICAL DISPOSITION OF ISOERGINE (FROM ARGYREIA-NERVOSA (BURM. F.) BOJER-CONVOLVULACEAE) AND ITS EFFECT ON THE CONDITIONED AVOIDANCE RESPONSE IN RATS.** 120012 02-03
- DRUG DISPOSITION AS A FACTOR IN THE LOWERING OF BRAIN SEROTONIN BY CHLOROAMPHETAMINES IN THE RAT.** 121204 02-03
- THYROID ACTION ON BEHAVIORAL PHYSIOLOGICAL EFFECTS AND DISPOSITION OF PHENOTHIAZINES.** 122238 02-04
- DISRUPTION**  
**DISRUPTION OF A TEMPORAL DISCRIMINATION BY THE MINOR TRANQUILIZER, OXAZEPAM.** 119982 02-04
- DISSOCIATION**  
**DISSOCIATION OF VERTICAL AND HORIZONTAL COMPONENTS OF ACTIVITY IN RATS TREATED WITH LITHIUM CHLORIDE.** 133521 02-04  
**DISSOCIATION OF THE BEHAVIOURAL AND ENDOCRINE EFFECTS OF LYSINE VASOPRESSIN BY TRYPTIC DIGESTION.** 133753 02-04
- DISTILLATE**  
**COMPARISON OF BEHAVIORAL EFFECTS OF SYNTHETIC (-)-DELTA9-TRANS-TETRAHYDROCANNABINOL AND MARIJUANA EXTRACT DISTILLATE IN CHIMPANZEES.** 122398 02-04
- DISTURANCE**  
**CHRONIC HALLUCINOGENIC DRUG USE AND THOUGHT DISTURBANCE.** 126221 02-14
- DISTURBANCES**  
**OXAZEPAM IN THE TREATMENT OF NEUROTIC DISTURBANCES AS WELL AS IN THE WITHDRAWAL MANAGEMENT OF ALCOHOLICS AND DRUG ADDICTS.** 121600 02-10  
**CEREBRAL DISTURBANCES IN PREGNANCY DUE TO ACUTE POISONING WITH STEMETIL.** 133068 02-15  
**TREATMENT OF PSYCHIC DISTURBANCES IN AGING INDIVIDUALS.** 133642 02-11
- DISTURBED**  
**LITHIUM AND CHLORPROMAZINE: A CONTROLLED CROSSOVER STUDY OF HYPERACTIVE SEVERELY DISTURBED YOUNG CHILDREN.** 131003 02-11
- DISULFIRAM**  
**RIFAMPIN WITH DISULFIRAM.** 120977 02-15  
**SAFETY OF DISULFIRAM (ANTABUSE).** 131617 02-15  
**DISULFIRAM LIKE EFFECTS OF TRICHOMONACIDAL DRUGS: A REVIEW AND DOUBLE-BLIND STUDY.** 133603 02-11
- DIURETIC**  
**DRUG INTERACTIONS AND DIURETIC THERAPY.** 122049 02-15
- DOCTOR**  
**WHAT EVERY DOCTOR SHOULD KNOW ABOUT DRUG THERAPY FOR PSYCHOTICS.** 120796 02-08
- DOG**  
**INDOLE METABOLISM AND BEHAVIOR IN DOG.** 118931 02-04
- DOGS**  
**PHENITRONE: INEFFECTIVE BLOCKADE OF (-) TRANS-DELTA9-TETRAHYDROCANNABINOL IN MICE AND DOGS.** 122448 02-03  
**REDUCTION OF ANXIETY IN GENETICALLY TIMID DOGS; DRUG-INDUCED SCHIZOKINESIS AND AUTOKINESIS.** 132527 02-04  
**THE EFFECTS OF CHRONIC ADMINISTRATION OF TRANS-DELTA9-TETRAHYDROCANNABINOL ON BEHAVIOR AND THE CARDIOVASCULAR SYSTEM OF DOGS.** 132719 02-03
- DOPA**  
**INHIBITION OF DOPA DECARBOXYLATION BY RO-4-4602, MK-485 AND MK-486 IN HUMAN LIVER HOMOGENATES.** 122081 02-03  
**HALOPERIDOL IN DOPA INDUCED CHOREO-ATHETOSIS.** 130018 02-11  
**CHANGES IN TYROSINE HYDROXYLASE AND DOPA DECARBOXYLASE INDUCED BY PHARMACOLOGICAL AGENTS.** 132706 02-03
- DOPADECARBOXYLASE**  
**INHIBITION OF DOPADECARBOXYLASE IN THE RAT BY A SERIES OF BENZYLXYLAMINES.** 121314 02-03

# Psychopharmacology Abstracts

- DOPAMINE**  
**MORPHINE CATALEPSY IN THE RAT; RELATION TO STRIATAL DOPAMINE METABOLISM.** 119032 02-03  
**EFFECTS OF A DOPAMINE DA-BETA-HYDROXYLASE INHIBITOR ON TIMING BEHAVIOUR.** 120013 02-04  
**INTRAHYPOTHALAMIC AND INTRASTRIATAL DOPAMINE AND NOREPINEPHRINE INJECTIONS IN RELATION TO MOTOR HYPERACTIVITY IN RATS.** 120019 02-04  
**THE EFFECTS OF CHRONIC IMIPRAMINE ADMINISTRATION ON RAT BRAIN LEVELS OF SEROTONIN, 5-HYDROXYINDOLEACETIC ACID, NOREPINEPHRINE AND DOPAMINE.** 120359 02-03  
**NOREPINEPHRINE AND DOPAMINE: ASSAY BY MASS FRAGMENTOGRAPHY IN THE PICOMOLE RANGE.** 120529 02-01  
**SPECIFIC ANTAGONISM BY DOPAMINE INHIBITORS OF ITEMS OF AMPHETAMINE INDUCED AGGRESSIVE BEHAVIOUR.** 120791 02-04  
**THE SPONTANEOUS MOTILITY OF RATS AFTER INTRAVENTRICULAR INJECTION OF DOPAMINE.** 121275 02-04  
**EFFECT OF INTRAVENTRICULAR INFUSION OF DOPAMINE AND NOREPINEPHRINE ON MOTOR ACTIVITY.** 121370 02-04  
**EFFECT OF GAMMA-HYDROXYBUTYRATE ON DOPAMINE AND DOPAMINE METABOLITES IN THE RAT STRIATUM.** 121522 02-03  
**ATHETOID AND CHOREIFORM HYPERKINESIAS PRODUCED BY CAUDATE APPLICATION OF DOPAMINE IN CATS.** 122195 02-04  
**EVIDENCE THAT METHADONE BLOCKS DOPAMINE RECEPTORS IN THE BRAIN.** 122284 02-03  
**TREATMENT OF TARDIVE DYSKINESIA: II. SHORT-TERM EFFICACY OF DOPAMINE BLOCKING AGENTS HALOPERIDOL AND THIOPROPAZATE.** 122704 02-11  
**RELEASE OF BRAIN DOPAMINE AS THE PROBABLE MECHANISM FOR THE HYPOTHERMIC EFFECT OF D-AMPHETAMINE.** 128353 02-03  
**TREATMENT OF TARDIVE DYSKINESIA: III. CLINICAL EFFICACY OF A DOPAMINE COMPETING AGENT, METHYLDOPA.** 129833 02-13  
**STUDIES ON THE ACCUMULATION OF O-METHYLATED DOPAMINE AND NORADRENALINE IN THE RAT BRAIN FOLLOWING VARIOUS NEUROLEPTICS, THYMOLEPTICS AND ACEPERONE.** 133129 02-03  
**L-DOPA, DOPAMINE, AND HYPOMANIA.** 134119 02-15
- DOPAMINE-BETA-HYDROXYLASE**  
**DOPAMINE-BETA-HYDROXYLASE: REGULATION OF ITS SYNTHESIS AND RELEASE FROM NERVE TERMINALS.** 122221 02-03  
**ENHANCED RELEASE OF DOPAMINE-BETA-HYDROXYLASE AND NOREPINEPHRINE FROM SYMPATHETIC NERVES BY DIBUTYRYL CYCLIC-AMP AND THEOPHYLLINE. (UNPUBLISHED PAPER).** 132369 02-03
- DOPAMINERGIC**  
**APOMORPHINE INDUCED HYPOTHERMIA IN MICE; A POSSIBLE DOPAMINERGIC EFFECT.** 133213 02-03
- DOSAGE**  
**SINGLE VERSUS REPEATED DOSAGE OF THE MINOR TRANQUILIZER CHLORDIAZEPOXIDE (LIBRIUM).** 120655 02-17  
**LOW DOSAGE PHENOTHIAZINE THERAPY: EFFECTIVE ANXIOLYTIC ACTION WITHOUT IMPAIRMENT TO INTELLECTUAL FUNCTION.** 132715 02-10  
**THE USE OF A FIXED DOSAGE COMBINATION OF AMITRIPTYLINE AND CHLORDIAZEPOXIDE IN THE TREATMENT OF PATIENTS SUFFERING FROM ANXIETY AND DEPRESSION.** 132754 02-09  
**IMPORTANCE OF ADEQUATE DOSAGE DETERMINATION OF DRUG EFFICACY: TRIAL OF A NEW BUTYROPHENONE COMPOUND ON ACUTE SCHIZOPHRENICS.** 133263 02-07
- DOSAGES**  
**EFFECTIVENESS OF DIAZEPAM AND METHYLPHENIDATE IN MULTIPLE DOSAGES IN MODIFYING INFANT TRAUMA EFFECTS.** 134104 02-04
- DOSE**  
**COMPARATIVE TRIAL OF LOW DOSE HALOPERIDOL AND FLUPHENAZINE IN OFFICE PATIENTS.** 120727 02-07

- EFFECT OF MORPHINE DOSE SIZE ON THE CONDITIONED REINFORCING POTENCY OF STIMULI PAIRED WITH MORPHINE. 126906 02-04
- DOSE-RESPONSE**
- COMPARISON OF THE DOSE-RESPONSE EFFECTS OF MORPHINE ON BRAIN AMINES, ANALGESIA AND ACTIVITY IN MICE. 119037 02-03
- CENTRAL BLOCKADE OF (METHYL)ATROPINE ON CARBACHOL DRINKING: A DOSE-RESPONSE STUDY. 121380 02-04
- THE DOSE-RESPONSE EFFECT OF AMPHETAMINE UPON AVOIDANCE BEHAVIOR IN THE RAT SEEN AS A FUNCTION OF INCREASING STEREOTYPY. 123935 02-04
- CHLORPROMAZINE IN CHRONIC SCHIZOPHRENIA: THE EFFECT OF AGE AND HOSPITALIZATION ON BEHAVIORAL DOSE-RESPONSE RELATIONSHIPS. 126227 02-08
- DOSE-RESPONSES**
- DOSE-RESPONSES AND RELATIONSHIPS BETWEEN ANTICHOLINERGIC ACTIVITY AND MOOD WITH TRICYCLIC ANTIDEPRESSANTS. 122193 02-14
- DOSES**
- MAGNESIUM PEMOLINE: EFFECTS OF A BROAD RANGE OF DOSES ON WATER MAZE PERFORMANCE. 120018 02-04
- DOUBLE**
- THE CHANGE OF BEHAVIOR PATTERN OF ALCOHOL ADDICTS TREATED WITH CYANAMIDE DOUBLE MEDICATION - OBSERVATIONS BY THEIR FAMILIES. 129088 02-11
- EFFECTS OF SCOPOLAMINE ON SPATIAL DOUBLE ALTERNATION IN RATS. 131132 02-04
- DOUBLE-BLIND**
- CLINICAL EVALUATION OF A NEW PSYCHOTROPIC DRUG; Y-4153 - COMPARATIVE STUDY WITH CHLORPROMAZINE USING A DOUBLE-BLIND METHOD. 120632 02-08
- METHYSERGIDE IN MANIA: A DOUBLE-BLIND COMPARISON WITH THIORIDAZINE. 121335 02-09
- FLUSPIRILENE AND PIPOTHIAZINE UNDECYLENATE, TWO LONG-ACTING INJECTABLE NEUROLEPTICS: A DOUBLE-BLIND CONTROLLED TRIAL IN RESIDUAL SCHIZOPHRENIA. 121544 02-08
- A DOUBLE-BLIND INVESTIGATION OF A NEW SOPORIFIC DRUG FOR USE WITH DEPRESSIVE PATIENTS. 121599 02-10
- CHANGES IN STAFF ANXIETY AND ATTITUDES DURING A DOUBLE-BLIND STUDY OF HALOPERIDOL IN ACUTE SCHIZOPHRENICS WITHIN A STRUCTURED MILIEU. 128349 02-08
- THE EFFECT OF THE AMITRIPTYLINE ON THE MASKED DEPRESSION - COMPARATIVE DOUBLE-BLIND CONTROLLED STUDY. 129737 02-09
- A DOUBLE-BLIND CONTROLLED TRIAL OF PSYCHOTROPIC DRUG OXAZOLAM ON NEUROTICS, WITH SPECIAL REFERENCE TO ITS HYPNOTIC EFFECT. 130068 02-10
- A DOUBLE-BLIND SEQUENTIAL COMPARISON OF DOXEPIIN WITH AMITRIPTYLINE IN DEPRESSED PATIENTS. 131344 02-09
- CLORAZEPATE DIPOTASSIUM IN ANXIETY: A DOUBLE-BLIND TRIAL WITH DIAZEPAM CONTROLS. 132952 02-07
- A DOUBLE-BLIND COMPARISON OF THE EFFICACY OF EX-10-029 AND TRIHEXYPHENIDYL HYDROCHLORIDE IN RELIEVING DRUG-INDUCED PARKINSONIAN SYMPTOMS. 132956 02-07
- COMPARISON OF PERPHENAZINE (TRILAFON TABLETS) WITH PERPHENAZINE ENANTHATE (TRILAFON DEPOT INJECTION) IN A DOUBLE-BLIND TRIAL. 133351 02-08
- DISULFIRAM LIKE EFFECTS OF TRICHOMONACIDAL DRUGS: A REVIEW AND DOUBLE-BLIND STUDY. 133603 02-11
- DOXEPIIN**
- THE PLACE OF DOXEPIIN AMONG THE ANXIOLYTIC - SEDATIVE DRUGS. 119170 02-13
- A COMPARATIVE TRIAL OF DOXEPIIN AND DIAZEPAM IN ANXIETY STATES. 119984 02-10
- THE ACTION OF IMPRIMINE, AMITRIPTYLINE, DOXEPIIN AND BUTRIPTYLINE IN AN OPERANT CONDITIONING SCHEDULE. 120014 02-04
- COMPARATIVE STUDY OF PARENTERAL DOXEPIIN AND DIAZEPAM. 121597 02-10
- DOXEPIIN AND AMITRIPTYLINE PERPHENAZINE IN MIXED ANXIOUS DEPRESSED NEUROTIC OUTPATIENTS: A COLLABORATIVE CONTROLLED STUDY. 123933 02-10
- A DOUBLE-BLIND SEQUENTIAL COMPARISON OF DOXEPIIN WITH AMITRIPTYLINE IN DEPRESSED PATIENTS. 131344 02-09
- DRINKING**
- CENTRAL BLOCKADE OF (METHYL)ATROPINE ON CARBACHOL DRINKING: A DOSE-RESPONSE STUDY. 121380 02-04
- EFFECTS OF TRIHEXYPHENIDYL ON SCHEDULE INDUCED ALCOHOL DRINKING BY RATS. 125531 02-03
- PHARMACOLOGICAL INHIBITION OF EATING, DRINKING AND PRANDIAL DRINKING. 133679 02-04
- DRIVE**
- HABIT STRENGTH, DRIVE, AND DRUG EFFECTS: ROUND 2. 122953 02-04
- DRL-20**
- EFFECTS OF SYSTEMIC ADMINISTRATION OF PROPRANOLOL ON THE TIMING BEHAVIOR (DRL-20) OF RATS. 132761 02-04
- DRUG**
- RELATION BETWEEN DRUG METABOLIZING ACTIVITY AND PHOSPHOLIPIDS IN HEPATIC MICROSOMES. I. EFFECTS OF PHENOBARBITAL, CARBON TETRACHLORIDE, AND ACTINOMYCIN-D. 119001 02-03
- INAPPROPRIATE RESPONSE OF DRUG ADDICTS TO CARDIOTHORACIC SURGERY. 119039 02-15
- TREATING PHOBIAS - WITH A DRUG. 119612 02-10
- ANTIDEPRESSANT DRUG THERAPY: ADDICTS VERSUS NONADDICTS. 119758 02-14
- THE USE OF A SIMPLE TEST OF ATTENTION AS A MEASURE OF DRUG EFFECTS IN SCHIZOPHRENIC PATIENTS. 120085 02-08
- A STRATEGY FOR THE STUDY OF BEHAVIORAL MECHANISMS OF ANTIPSYCHOTIC DRUG ACTION IN SCHIZOPHRENIA. 120122 02-08
- CLINICAL EVALUATION OF A NEW PSYCHOTROPIC DRUG; Y-4153 - COMPARATIVE STUDY WITH CHLORPROMAZINE USING A DOUBLE-BLIND METHOD. 120632 02-08
- PERSISTENT DYSKINESIAS IN DRUG USERS. 120733 02-15
- DRUG EFFECTS ON UNCONDITIONED LIGHT AVOIDANCE IN THE RAT. 120787 02-04
- WHAT EVERY DOCTOR SHOULD KNOW ABOUT DRUG THERAPY FOR PSYCHOTICS. 120796 02-08
- CATECHOLAMINE METABOLISM, DEPRESSIVE ILLNESS AND DRUG RESPONSE. 120992 02-13
- ACCUMULATION AND ELIMINATION OF A NOVEL METABOLITE DURING CHRONIC ADMINISTRATION OF THE PHENOTHIAZINE DRUG PERAZINE TO RATS. 121198 02-03
- DRUG DISPOSITION AS A FACTOR IN THE LOWERING OF BRAIN SEROTONIN BY CHLOROAMPHETAMINES IN THE RAT. 121204 02-03
- SOME EFFECTS OF THE HALLUCINOGENIC DRUG 2,5 DIMETHOXY-4 METHYLAMPHETAMINE ON THE METABOLISM OF BIOGENIC AMINES IN THE RAT BRAIN. 121305 02-03
- PART 2. IMPROVEMENT CRITERIA IN DRUG TRIALS WITH NEUROTIC PATIENTS. 121406 02-10
- A DOUBLE-BLIND INVESTIGATION OF A NEW SOPORIFIC DRUG FOR USE WITH DEPRESSIVE PATIENTS. 121599 02-10
- OXAZEPAM IN THE TREATMENT OF NEUROTIC DISTURBANCES AS WELL AS IN THE WITHDRAWAL MANAGEMENT OF ALCOHOLICS AND DRUG ADDICTS. 121600 02-10
- DRUG USAGE IN THE IRRITABLE COLON SYNDROME. 121779 02-17
- DRUG INTERACTIONS AND DIURETIC THERAPY. 122049 02-15
- TIME DRUG MODULATIONS OF PHOTICALLY EVOKED AFTER-DISCHARGE PATTERNS. 122062 02-03
- DRUG IDENTIFICATION, PROPERTIES AND CHARACTERISTICS: NARCOTICS, STIMULANTS, DEPRESSANTS, MARIJUANA AND HALLUCINOGENS. 122148 02-03



## Subject Index

- THE EFFECT OF CALCIUM AND MAGNESIUM IONS ON DRUG RECEPTOR INTERACTIONS. 122239 02-03
- ROUTE OF ADMINISTRATION AND DRUG METABOLISM. 122241 02-03
- EFFECT OF COLD EXPOSURE ON DRUG ACTION AND HEPATIC DRUG METABOLISM IN THE RAT. 122247 02-03
- DRUG INTERACTIONS. 122420 02-15
- PHOBIC ANXIETY SYNDROME COMPLICATED BY DRUG DEPENDENCE AND ADDICTION. 122663 02-10
- HABIT STRENGTH, DRIVE, AND DRUG EFFECTS: ROUND 2. 122953 02-04
- AN ANALYSIS OF DRUG EFFECTS IN MICE EXPOSED TO A SIMPLE NOVEL ENVIRONMENT. 124153 02-04
- MEDICAL CARE OF PSYCHOTROPIC DRUG PROBLEM PATIENTS OUTSIDE HOSPITAL. 125278 02-17
- CHLORMETHIAZOLE, SLEEP, AND DRUG WITHDRAWAL. 126197 02-14
- ACUTE PSYCHOSIS INDUCED BY PSYCHOTOMIMETIC DRUG ABUSE: CLINICAL FINDINGS. 126219 02-12
- ACUTE PSYCHOSIS INDUCED BY PSYCHOTOMIMETIC DRUG ABUSE: NEUROCHEMICAL FINDINGS. 126220 02-13
- CHRONIC HALLUCINOGENIC DRUG USE AND THOUGHT DISTURBANCE. 126221 02-14
- DECISIONS ABOUT DRUG THERAPY II: EXPERT OPINION IN A HYPOTHETICAL SITUATION. 126990 02-17
- DRUG THERAPY OF CLINICAL DEPRESSIONS - CURRENT STATUS AND IMPLICATIONS FOR RESEARCH ON NEUROPHARMACOLOGY OF THE AFFECTIVE DISORDERS. 127220 02-09
- DRUG THERAPY: SEDATIVES AND TRANQUILIZERS. 129465 02-10
- A DOUBLE-BLIND CONTROLLED TRIAL OF PSYCHOTROPIC DRUG OXAZOLAM ON NEUROTICS, WITH SPECIAL REFERENCE TO ITS HYPNOTIC EFFECT. 130068 02-10
- BEHAVIORAL CONTROL OF DRUG METABOLISM AND BODY TEMPERATURE: BIOCHEMICAL AND PHYSIOLOGICAL CORRELATES. (PH.D. DISSERTATION). 130761 02-03
- DRUG EFFECTS ON BASELINE GO/NO-GO DISCRIMINATION AND SERIAL DISCRIMINATION REVERSAL LEARNING. 131285 02-04
- DECISIONS ABOUT DRUG THERAPY. III. SELECTION OF TREATMENT FOR PSYCHIATRIC INPATIENTS. 131961 02-14
- DRUG AND SOCIO-THERAPY IN THE AFTERCARE OF SCHIZOPHRENIC PATIENTS: ONE-YEAR RELAPSE RATES. 131963 02-08
- RHYTHMIC ACTIVITY OF THE VESTIBULO-OCULOMOTOR SYSTEM INDUCED BY A CHOLINERGIC DRUG. 132164 02-03
- RELATIONSHIPS BETWEEN SERUM AND CEREBROSPINAL FLUID ANTICONVULSANT DRUG AND FOLIC ACID CONCENTRATIONS IN EPILEPTIC PATIENTS. 132710 02-13
- ELECTROENCEPHALOGRAPH AND BEHAVIOR OF RABBITS IN PHYSIOLOGICAL AND DRUG-INDUCED SLEEP: PART II: EEG OF THE RABBIT IN DRUG INDUCED SLEEP. 132829 02-04
- INHIBITION OF HEPATIC MICROSOMAL DRUG METABOLISM BY THE HYDRAZINES RO-4-4602, NK-486, AND PROCARBAZINE HYDROCHLORIDE. 132893 02-03
- CLINICAL AND EEG EFFECTS OF GB-94, A TETRACYCLIC ANTIDEPRESSANT (EEG MODEL IN DISCOVERY OF A NEW PSYCHOTROPIC DRUG). 132894 02-07
- SOMATOSENSORY EVOKED POTENTIAL: AN OBJECTIVE INDICATOR OF THE THERAPY EFFICACY OF A NEW PSYCHOTROPIC DRUG, CLORAZEPATE DIPOTASSIUM (TRANXENE). 132953 02-07
- IN VITRO METHODS OF DETECTING DRUG HYPERSENSITIVITY. 132995 02-15
- ON THE PROBLEM OF DRUG PATHOGENESIS. 133083 02-10
- CENTRAL ATROPINE-LIKE TOXICITY IN COMBINED PSYCHOTROPIC DRUG ADMINISTRATION. 133123 02-15

## Psychopharmacology Abstracts

- IMPORTANCE OF ADEQUATE DOSAGE DETERMINATION OF DRUG EFFICACY: TRIAL OF A NEW BUTYROPHENONE COMPOUND ON ACUTE SCHIZOPHRENICS. 133263 02-07
- REPORT ON A CASE OF STATUS-PSYCHOMOTRICUS WITH TONIC TWILIGHT ATTACKS IN DRUG OVERDOSE. 133331 02-15
- PSYCHOTROPIC DRUG INFLUENCES ON BRAIN ACETYLCHOLINE UTILIZATION. 133474 02-03
- PARKINSONS TREMOR, RELIEF BY AN ANTIAMINIC DRUG (BC-105); DISCUSSION ON THE BIOCHEMICAL PATHOGENESIS OF PARKINSONIAN TREMOR. 133517 02-11
- ELECTROENCEPHALOGRAPH AND BEHAVIOR OF RABBITS IN PHYSIOLOGICAL AND DRUG INDUCED SLEEP: PART III: INFLUENCE OF HYPNOTICS ON SLEEP BEHAVIOR OF RABBITS; DISCUSSION AND SUMMARY. 133672 02-03
- EFFECTS OF CHRONIC PRAZEPAM ADMINISTRATION ON DRUG METABOLISM IN MAN AND RAT. 133685 02-13
- DRUG-FREE**
- SLEEP OF SEVEN PHENOTHIAZINE RESISTANT, DRUG-FREE CHRONIC SCHIZOPHRENICS. 124257 02-17
- DRUG-INDUCED**
- DRUG-INDUCED ALTERATIONS IN THE ACTIVITY OF RAT BRAIN CHOLINERGIC ENZYMES: I. IN VITRO AND IN VIVO EFFECT OF AMPHETAMINE. 120230 02-03
- THE EFFECTS OF PROCAINE, AMYLOBARBITONE ON DRUG-INDUCED CHANGES IN THE SURFACE POTENTIALS OF AN ISOLATED SYMPATHETIC GANGLION. 121302 02-03
- TEMPORARY ALTERATION OF CEREBROVASCULAR PERMEABILITY TO PLASMA PROTEIN DURING DRUG-INDUCED SEIZURES. 122177 02-03
- A DRUG-INDUCED CEREBRAL REACTION: A CASE OF MYOCLONIC STATUS UNDER TREATMENT WITH TRICYCLIC ANTIDEPRESSANTS. 122340 02-15
- DRUG-INDUCED FACILITATION OF ACTIVE AVOIDANCE: A BEHAVIORAL EXPLANATION. 131436 02-04
- REDUCTION OF ANXIETY IN GENETICALLY TIMID DOGS: DRUG-INDUCED SCHIZOKINESIS AND AUTOKINESIS. 132527 02-04
- DEPRESSION BY AMANTADINE OF DRUG-INDUCED RIGIDITY IN THE RAT. 132681 02-03
- SCHEDULE CONTROLLED AND DRUG-INDUCED RELEASE OF NOREPINEPHRINE-7-3H INTO THE LATERAL VENTRICLE OF RATS. 132689 02-03
- THE EFFECT OF ELANTRINE, A NEW ANTIPARKINSONISM AGENT, ON DRUG-INDUCED TREMOR IN MICE. 132778 02-11
- ELECTROENCEPHALOGRAPH AND BEHAVIOR OF RABBITS IN PHYSIOLOGICAL AND DRUG-INDUCED SLEEP: PART II: EEG OF THE RABBIT IN DRUG INDUCED SLEEP. 132829 02-04
- A DOUBLE-BLIND COMPARISON OF THE EFFICACY OF EX-10-029 AND TRIHEXYPHENIDYL HYDROCHLORIDE IN RELIEVING DRUG-INDUCED PARKINSONIAN SYMPTOMS. 132956 02-07
- DRUGS**
- IDENTIFICATION OF DRUGS TAKEN IN OVERDOSE CASES. 119022 02-06
- LONG-ACTING NEUROLEPTICS AND OTHER PSYCHOACTIVE DRUGS OF THE FUTURE. 119024 02-17
- THE PLACE OF DOXEPIN AMONG THE ANXIOLYTIC - SEDATIVE DRUGS. 119170 02-13
- EFFECT OF DRUGS THAT MODIFY 3,5 AMP CONCENTRATIONS ON MORPHINE ANALGESIA. 119303 02-03
- GUIDELINES FOR PSYCHOLOGISTS FOR THE USE OF DRUGS IN RESEARCH. 119546 02-17
- THE EFFECT OF IMMUNOSYPHACTOMY ON THE RESPONSES OF THE MOUSE TO RESERPINE AND VARIOUS ANTIDEPRESSANT AND STIMULANT DRUGS. 120011 02-03
- THE EFFECTS OF DRUGS ON OBJECTIVE MEASURES OF THOUGHT DISORDER IN SCHIZOPHRENIC PATIENTS. 120120 02-08
- PSYCHOPHYSIOLOGIC RESPONSES OF SCHIZOPHRENICS TO DRUGS. 120121 02-08
- EVALUATING THE LONG-TERM NEED FOR ANTIPARKINSON DRUGS BY CHRONIC SCHIZOPHRENICS. 120699 02-08

- INTERNATIONAL CONVENTION ON PSYCHOTROPIC DRUGS. 120735 02-17
- PARTIAL ANTAGONISM OF THE BEHAVIOURAL AND NEUROCHEMICAL EFFECTS OF PHENCYCLIDINE BY DRUGS AFFECTING MONOAMINE METABOLISM. 120794 02-04
- THE EFFECTS OF SOME DRUGS AFFECTING BRAIN 5-HT ON THE AGGRESSIVE BEHAVIOR AND SPONTANEOUS ELECTRICAL ACTIVITY OF THE CENTRAL NERVOUS SYSTEM OF THE ANT, FORMICA-RUFA. 120812 02-04
- DRUGS VERSUS PSYCHOTHERAPY. 121261 02-17
- PSYCHOACTIVE DRUGS AND BRAIN NEUROCHEMICAL TRANSMITTERS. 121299 02-13
- THE INFLUENCE OF SOME CENTRALLY ACTING DRUGS ON SYMPATHETIC NERVE ACTIVITY. 121308 02-03
- NARCOTIC DRUGS: EFFECTS ON THE SEROTONIN BIOSYNTHETIC SYSTEMS OF THE BRAIN. 121320 02-03
- EFFECTS OF PSYCHOTROPIC DRUGS ON THE ERYTHROCYTE PERMEABILITY TO GLUCOSE AND ETHYLIDENE GLUCOSE. 121402 02-03
- THE HAZARD OF NEUROTROPIC DRUGS IN THE FERTILE YEARS. 121578 02-15
- PSYCHOTROPIC DRUGS AND THE ELDERLY PATIENT. 121780 02-15
- SYMPOSIUM: BEHAVIOR MODIFICATION BY DRUGS. III. THE CLINICAL USE OF STIMULANT DRUGS IN CHILDREN. 121988 02-14
- SYMPOSIUM: BEHAVIOR MODIFICATION BY DRUGS. II. PSYCHOLOGICAL EFFECTS OF STIMULANT DRUGS IN CHILDREN WITH MINIMAL BRAIN DYSFUNCTION. 121989 02-14
- SYMPOSIUM: BEHAVIOR MODIFICATION BY DRUGS. I. PHARMACOLOGY OF THE AMPHETAMINES. 121990 02-13
- ALTERED CALCIUM METABOLISM DUE TO ANTICONVULSANT DRUGS. 122019 02-11
- ELECTROENCEPHALOGRAPHIC CORRELATES IN OVERDOSAGE WITH ANTICONVULSIVE DRUGS. 122330 02-15
- BEHAVIOURAL AND BIOCHEMICAL COMPARISON OF AMPHETAMINE DERIVATIVES, COCAINE, BENZTROPINE, AND TRICYCLIC ANTIDEPRESSANT DRUGS. 122571 02-03
- MAINTENANCE PSYCHOTROPIC DRUGS IN THE PRESENCE OF ACTIVE TREATMENT PROGRAMS: A TRIPLE-BLIND WITHDRAWAL STUDY WITH LONG-TERM MENTAL PATIENTS. 122705 02-11
- THE SWITCH PROCESS IN MANIC-DEPRESSIVE ILLNESS. II. RELATIONSHIP TO CATECHOLAMINES, REM SLEEP, AND DRUGS. 122980 02-09
- THE ACTION OF SOME ANTICONVULSANT DRUGS ON COBALT INDUCED EPILEPSY AND ON THE BEMEGRIDE THRESHOLD IN ALERT CATS. 123631 02-03
- EFFECTS OF DIPHENYHYDANTOIN AND OTHER ANTIEPILEPTIC DRUGS ON EPILEPTIFORM ACTIVITY AND PURKINJE CELL DISCHARGE RATES. 123632 02-03
- CONDITIONING OF FOOD AVERSIONS BY INJECTIONS OF PSYCHOACTIVE DRUGS. 123983 02-04
- OXIDATION AND GLUCURONIDATION OF CERTAIN DRUGS IN VARIOUS SUBCELLULAR FRACTIONS OF RAT LIVER: BINDING OF DESMETHYLIMIPRAMINE AND HEXOBARBITAL TO CYTOCHROME-P-450 AND OXIDATION AND GLUCURONIDATION OF DESMETHYLIMIPRAMINE, AMINOPYRINE, P-NITROPHENOL AND 1-NAPHTHOL. 124120 02-03
- CONDITIONED SUPPRESSION OF BAR-PRESSING BEHAVIOR BY STIMULI ASSOCIATED WITH DRUGS. 124223 02-04
- THE CLASSIFICATION OF PSYCHOTROPIC DRUGS. 125038 02-17
- WHICH DRUGS ARE PSYCHEDELIC AND WHICH PSYCHOTOXIC? 126902 02-12
1. SCHEDULE DEPENDENT EFFECTS: EFFECTS OF DRUGS, AND MAINTENANCE OF RESPONDING WITH RESPONSE PRODUCED ELECTRIC SHOCKS. 127213 02-04
- PSYCHOTROPIC DRUGS. 128105 02-17
- DRUGS AND PUNISHED RESPONDING I: RATE-DEPENDENT EFFECTS UNDER MULTIPLE SCHEDULES. 128323 02-04
- INTERACTION OF HALLUCINOGENIC DRUGS WITH ENCEPHALITOGENIC PROTEIN OF MYELIN. 128457 02-13
- EFFECTS OF PSYCHOTROPIC DRUGS ON EMOTIONAL BEHAVIOR IN RATS WITH LIMBIC LESIONS, WITH SPECIAL REFERENCE TO OLFACTORY BULB ABLATIONS. 128458 02-04
- ON THE ADMINISTRATION OF PSYCHOTROPIC DRUGS AND ITS SIDE-EFFECTS DETECTED BY LIVER FUNCTION TEST. 128952 02-08
- BLOOD LEVELS OF ANTIEPILEPTIC DRUGS - CHEMICAL DETERMINATION OF ANTIEPILEPTIC DRUGS IN BODY FLUIDS. 129211 02-06
- QUANTITATIVE PHARMACO-ELECTROENCEPHALOGRAPHY IN THE DISCOVERY OF A NEW GROUP OF PSYCHOTROPIC DRUGS. 130472 02-07
- THE INTERACTION OF DELTA9-TETRAHYDROCANNABINOL WITH COMMONLY USED DRUGS. (UNPUBLISHED PAPER). 130524 02-03
- COMPARATIVE STUDY OF TWO ANTIPSYCHOTIC DRUGS IN A STATE HOSPITAL. 130546 02-11
- EFFECTS OF DRUGS ON INTERTRIAL INTERVAL BEHAVIOR IN DELAYED ALTERNATION. 131284 02-04
- THE USE OF ANTIHISTAMINES FOR THE ALLEVIATION OF URINARY RETENTION CAUSED BY PSYCHOTROPIC DRUGS. 131574 02-15
- PSYCHOTROPIC DRUGS. (UNPUBLISHED PAPER). 132363 02-03
- CLINICAL EVALUATION OF ANALGESIC DRUGS. 133141 02-13
- SOME OBSERVATIONS ON THE BEHAVIOURAL EFFECTS OF HALLUCINOGENIC DRUGS ON RATS: POTENTIATION BY TWO DRUGS AFFECTING MONOAMINE METABOLISM. 133180 02-04
- BLOCKING H3-MOREPINEPHRINE UPTAKE AND SOME GUANETHIDINE INDUCED EFFECTS WITH TRICYCLIC PSYCHOTHERAPEUTIC DRUGS. 133182 02-03
- EFFECT OF STIMULATORY DRUGS ON THE SOMATOSENSORY EVOKED POTENTIAL IN MAN. 133348 02-13
- THE EFFECT OF NEUROLEPTIC DRUGS ON CEPHALIC CIRCULATION IN ELDERLY PSYCHIATRIC PATIENTS. 133353 02-11
- THE ACTION OF NEUROLEPTIC DRUGS ON THE MOTOR SYSTEM IN MAN. 133354 02-13
- ALTERATIONS BY CENTRALLY ACTING DRUGS OF THE SUPPRESSION OF SELF-STIMULATION BEHAVIOR IN THE RAT BY TETRABENAZINE, PHYSOSTIGMINE, CHLORPROMAZINE AND PENTOBARBITAL. 133473 02-04
- DISULFIRAM LIKE EFFECTS OF TRICHOMONACDAL DRUGS: A REVIEW AND DOUBLE-BLIND STUDY. 133603 02-11
- MULTIPLE REGRESSION TECHNIQUES IN PREDICTING PATIENT RESPONSE TO PSYCHOPHARMACOLOGIC DRUGS. 133644 02-16
- EFFECT OF DRUGS ON THE CALCIUM EXCHANGEABILITY IN THE PINEAL GLAND. 133751 02-03
- DRUGS IN THE TREATMENT OF DEPRESSION. 133963 02-09
- INHIBITION OF EXTRAPYRAMIDAL SIDE-EFFECTS OF HALOPERIDOL THROUGH THE JOINT USE OF IMIPRAMINE-TYPE DRUGS. 134326 02-15
- DRYNESS**
- A CONTROLLED STUDY ON THE POSSIBLE EFFECT OF DIHYDROERGOTAMINE AGAINST DRYNESS OF THE MOUTH IN PATIENTS TREATED WITH TRICYCLIC ANTIDEPRESSANTS. 134312 02-13
- DUAL**
- THE EFFECT OF BETA-PHENETHYLAMINE UPON SPONTANEOUS MOTOR ACTIVITY IN MICE: A DUAL EFFECT ON LOCOMOTOR ACTIVITY. 121315 02-04
- DURATION**
- FURTHER PHARMACOLOGICAL STUDY ON ANTIAGGRESSIVE, SEDATIVE AND MUSCLE RELAXANT 8-CHLORO-6-PHENYL-4H-S-TRIAZOLOBENZODIAZEPINE (D-40TA) IN EXPERIMENTAL ANIMALS: COMPARATIVE STUDY ON POTENCY AND DURATION. 130909 02-04
- DUROMINE**
- THE ANORECTIC EFFECT OF A LONG-ACTING PREPARATION OF PHENTERMINE (DUROMINE). 133472 02-11
- DYNAMICS**
- DYNAMICS OF THE REGULATION OF HISTAMINE LEVELS IN MOUSE BRAIN. 121072 02-03

# Subject Index

# Psychopharmacology Abstracts

## DYSFUNCTION

SYMPOSIUM: BEHAVIOR MODIFICATION BY DRUGS. II. PSYCHOLOGICAL EFFECTS OF STIMULANT DRUGS IN CHILDREN WITH MINIMAL BRAIN DYSFUNCTION.

121989 02-14

## DYSFUNCTIONING

EFFECTS OF PROPRANOLOL ON MARIHUANA INDUCED COGNITIVE DYSFUNCTIONING.

119034 02-14

## DYSKINESIA

RESERPINE FOR TARDIVE DYSKINESIA.

120855 02-13

TREATMENT OF TARDIVE DYSKINESIA. II. SHORT-TERM EFFICACY OF DOPAMINE BLOCKING AGENTS HALOPERIDOL AND THIOPROPAZATE.

122704 02-11

THERAPEUTIC APPROACHES TO TARDIVE DYSKINESIA: A REVIEW OF THE LITERATURE.

126229 02-14

PREVENTION AND MANAGEMENT OF TARDIVE DYSKINESIA.

127389 02-11

TREATMENT OF TARDIVE DYSKINESIA. III. CLINICAL EFFICACY OF A DOPAMINE COMPETING AGENT, METHYLDOPA.

129833 02-13

## DYSKINESIAS

THE PREVALENCE OF TARDIVE DYSKINESIAS IN MENTAL HOSPITAL PATIENTS.

120729 02-15

PERSISTENT DYSKINESIAS IN DRUG USERS.

120733 02-15

IMPLICATIONS OF AMPHETAMINE INDUCED STEREOTYPED BEHAVIOR AS A MODEL FOR TARDIVE DYSKINESIAS.

126230 02-13

THE PHARMACOLOGY OF TARDIVE DYSKINESIAS.

134120 02-15

## DYSTONIC

PASPERTIN (METOCLOPRAMIDE) AS A CAUSE OF DYSTONIC HYPERKINETIC SYNDROME IN CHILDREN.

132901 02-15

NEW DYSTONIC SYNDROME ASSOCIATED WITH BUTYROPHENONE THERAPY.

133516 02-15

## EATING

EFFECTS OF AMPHETAMINE AND PILOCARPINE ON EATING BEHAVIOR IN RATS WITH CHRONICALLY LOW ACETYLCHOLINESTERASE LEVELS.

121177 02-04

CLONIDINE INDUCED INTRAHYPOTHALAMIC STIMULATION OF EATING IN RATS.

122395 02-04

INCREASED AND DECREASED EATING FOLLOWING THC ADMINISTRATION.

125538 02-04

PHARMACOLOGICAL INHIBITION OF EATING, DRINKING AND PRANDIAL DRINKING.

133679 02-04

## ECHANCEMENT

ECHANCEMENT OF SWIMMING PERFORMANCE WITH DELTA9-TETRAHYDROCANNABINOL.

131283 02-04

## ECT

HORMONAL POTENTIATION OF IMIPRAMINE AND ECT IN PRIMARY DEPRESSION.

120267 02-09

CLINICAL RESULTS: INDOKLON VERSUS ECT.

129382 02-12

MEDICAL ASPECTS OF ECT.

129383 02-17

CATECHOLAMINE METABOLISM IN AFFECTIVE DISORDERS: A LONGITUDINAL STUDY OF A PATIENT TREATED WITH AMITRIPTYLINE AND ECT.

130109 02-09

## EDEMA

HEROIN INDUCED PULMONARY EDEMA: SEQUENTIAL STUDIES OF PULMONARY FUNCTION.

118897 02-15

EDEMA AND INCREASED PLASMA RENIN ACTIVITY IN LITHIUM TREATED PATIENTS.

120822 02-09

METHADONE INDUCED PULMONARY EDEMA.

121218 02-15

PSYCHOPHARMACOLOGICAL AGENTS AND CEREBRAL EDEMA.

130019 02-15

## EDUCATION

EDUCATION OF THE PSYCHOSOMATIC MEDICINE.

125863 02-17

## EEG

EFFECTS OF L-DOPA ON THE EEG AND BRAIN AMINES OF UNRESTRAINED RATS.

121063 02-03

EEG AND NEUROPHYSIOLOGICAL STUDIES OF LITHIUM IN NORMAL VOLUNTEERS.

122987 02-09

THE EEG AND BEHAVIORAL CONTINUUM OF THE CROCODILIAN CAIMAN-SCLEROPS. 2. EEG AND EMG SPIKE ACTIVITY.

124225 02-03

ELECTROENCEPHALOGRAPH AND BEHAVIOR OF RABBITS IN PHYSIOLOGICAL AND DRUG-INDUCED SLEEP. PART II: EEG OF THE RABBIT IN DRUG INDUCED SLEEP.

132829 02-04

CLINICAL AND EEG EFFECTS OF GB-94, A TETRACYCLIC ANTI-DEPRESSANT (EEG MODEL IN DISCOVERY OF A NEW PSYCHOTROPIC DRUG).

132894 02-07

## EFFECTIVENESS

EFFECTIVENESS OF WEIGHT REDUCTION INVOLVING DIET PILLS.

132958 02-11

EFFECTIVENESS OF DIAZEPAM AND METHYLPHENIDATE IN MULTIPLE DOSAGES IN MODIFYING INFANT TRAUMA EFFECTS.

134104 02-04

## EFFLUX

MECHANISMS FOR THE EFFLUX OF 14C-DOPA AND 14C-DOPAMINE FROM THE CSF OF RHESUS MONKEYS.

118853 02-03

CALCIUM EFFLUX AND RESPIRATORY INHIBITION IN BRAIN MITOCHONDRIA: EFFECTS OF CHLORPROMAZINE METABOLITES.

122535 02-03

## EHRENBERG

PEYOTE ALKALOIDS: IDENTIFICATION IN THE MEXICAN CACTUS PELECYPHORA ASELLIFORMIS EHRENBERG.

132873 02-01

## ELANTRINE

THE EFFECT OF ELANTRINE, A NEW ANTIPARKINSONISM AGENT, ON DRUG-INDUCED TREMOR IN MICE.

132778 02-11

## ELDERLY

PSYCHOTROPIC DRUGS AND THE ELDERLY PATIENT.

121780 02-15

THE EFFECT OF NEUROLEPTIC DRUGS ON CEPHALIC CIRCULATION IN ELDERLY PSYCHIATRIC PATIENTS.

133353 02-11

## ELECTRIC

1. SCHEDULE DEPENDENT EFFECTS: EFFECTS OF DRUGS, AND MAINTENANCE OF RESPONDING WITH RESPONSE PRODUCED ELECTRIC SHOCKS.

127213 02-04

THE ELECTRIC INTERPHASIC BLOOD POTENTIAL FOR SODIUM AND POTASSIUM IONS IN PATIENTS TREATED WITH CHLORPROMAZINE FOR VARIOUS MENTAL DISORDERS.

133463 02-13

## ELECTRICAL

EFFECTS OF CHLORDIAZEPOXIDE UPON SPONTANEOUS ALTERNATION AND THE HIPPOCAMPAL ELECTRICAL ACTIVITY IN WHITE RATS.

120792 02-04

THE EFFECTS OF SOME DRUGS AFFECTING BRAIN 5-HT ON THE AGGRESSIVE BEHAVIOR AND SPONTANEOUS ELECTRICAL ACTIVITY OF THE CENTRAL NERVOUS SYSTEM OF THE ANT, FORMICA-RUFA.

120812 02-04

EFFECTS OF PICROTOXIN AND STRYCHNINE UPON ELECTRICAL ACTIVITY OF THE PROXIMAL RETINA.

121968 02-03

THE EFFECTS OF PROPRANOLOL AND ELECTRICAL STIMULATION ON THE CYCLIC 3,5 AMP CONTENT OF ISOLATED CEREBRAL TISSUE.

122357 02-03

THE EFFECT OF L-DOPA ON CORTICAL AND SUBCORTICAL ELECTRICAL ACTIVITY IN NORMAL UNRESTRAINED RATS.

133294 02-03

## ELECTROCORTICAL

EFFECTS OF GAMMA-HYDROXYBUTYRATE ON CHICK BEHAVIOUR, ELECTROCORTICAL ACTIVITY AND CROSSED EXTENSOR REFLEXES.

120124 02-05

## ELECTROENCEPHALOGRAPH

ELECTROENCEPHALOGRAPH AND BEHAVIOR OF RABBITS IN PHYSIOLOGICAL AND DRUG-INDUCED SLEEP. PART II: EEG OF THE RABBIT IN DRUG INDUCED SLEEP.

132829 02-04

DIGITAL COMPUTER ANALYZED SLEEP ELECTROENCEPHALOGRAPH (SLEEP PRINTS) IN PREDICTING ANXIOLYTIC PROPERTIES OF CLORAZEPATE DIPOTASSIUM (TRANXENE).

132950 02-14

THE EFFECTS OF SU-21707 ON THE SLEEP ELECTROENCEPHALOGRAPH OF NORMAL SUBJECTS.

132954 02-13

ELECTROENCEPHALOGRAPH AND BEHAVIOR OF RABBITS IN PHYSIOLOGICAL AND DRUG INDUCED SLEEP. PART III: INFLUENCE OF HYPNOTICS ON SLEEP BEHAVIOR OF RABBITS; DISCUSSION AND SUMMARY.

133672 02-03

**ELECTROENCEPHALOGRAPHIC**

ELECTROENCEPHALOGRAPHIC ACTIVATION WITH SLEEP AND METHOHEXITAL: COMPARATIVE USEFULNESS IN THE DIAGNOSIS OF EPILEPSY.

122253 02-14

ELECTROENCEPHALOGRAPHIC CORRELATES IN OVERDOSAGE WITH ANTICONVULSIVE DRUGS.

122330 02-15

OBSERVATIONS ON THE RELATION OF MIGRAINE AND EPILEPSY: AN ELECTROENCEPHALOGRAPHIC, PSYCHOLOGICAL, AND CLINICAL STUDY USING ORAL TYRAMINE.

123637 02-13

CLINICAL AND ELECTROENCEPHALOGRAPHIC EFFECTS OF ANAFRANIL TREATMENT IN DEPRESSION.

123884 02-13

ELECTROENCEPHALOGRAPHIC EFFECTS OF BICUCULLINE.

130361 02-03

**ELECTROENCEPHALOGRAPHICAL**

COMPARISON OF THE CLINICAL AND ELECTROENCEPHALOGRAPHICAL EFFECTS OF MOLINDONE AND TRIFLUOPERAZINE IN ACUTE SCHIZOPHRENIC PATIENTS.

120824 02-08

**ELECTROENCEPHALOGRAPHY**

METHOHEXITAL HYPNOSIS IN ELECTROENCEPHALOGRAPHY.

127876 02-13

**ELECTROGRAPHIC**

EFFECTS OF ANTIHISTAMINIC AGENTS UPON THE ELECTROGRAPHIC ACTIVITY OF THE CAT BRAIN: A POWER SPECTRAL DENSITY STUDY.

132686 02-03

**ELECTROLYTE**

THE EFFECT OF LITHIUM CHLORIDE ON THE ELECTROLYTE COMPOSITION OF CEREBROSPINAL FLUID OF THE RAT.

130355 02-03

**ELECTROLYTES**

VARIATIONS IN BLOOD AND URINARY ELECTROLYTES IN THE COURSE OF TREATMENT WITH LITHIUM SALTS.

122313 02-13

DILANTIN, BRAIN ELECTROLYTES, THE SO-CALLED SODIUM PUMP AND SEIZURES.

132528 02-03

**ELECTROMYOGRAPH**

EFFECT OF L-DOPA ON ELECTROMYOGRAPH AND HEART RATE OF PARKINSONIANS.

119246 02-13

**ELECTROMYOGRAPHIC**

NEUROPSYCHOLOGICAL AND ELECTROMYOGRAPHIC STUDIES ON THE SHORT-TERM PSYCHOTROPIC EFFECT OF L-DOPA.

133347 02-14

**ELECTRONIC**

CLINICAL PSYCHOPHARMACOLOGICAL ASSESSMENT AND LONG-TERM OBSERVATION USING ELECTRONIC DATA PROCESSING.

133482 02-17

**ELECTROPHYSIOLOGICAL**

AN ELECTROPHYSIOLOGICAL ANALYSIS OF HALLUCINOGENS.

127519 02-13

**ELECTROSHOCK**

RESERPINE INDUCED ALTERATIONS IN BRAIN AMINES AND THEIR RELATIONSHIP TO CHANGES IN THE INCIDENCE OF MINIMAL ELECTROSHOCK SEIZURES IN MICE.

120360 02-03

THE EFFECTS OF ELECTROSHOCK THERAPY, LITHIUM AND TRICYCLIC ANTIDEPRESSANT TREATMENT ON PROBENECID INDUCED ACCUMULATIONS OF CSF AMINE METABOLITES IN DEPRESSED PATIENTS. (UNPUBLISHED PAPER).

125200 02-09

NARCOSIS IN ELECTROSHOCK WITH A DERIVATIVE OF FENCICLIDINE.

132988 02-13

**ELECTROSHOCKED**

BRAIN BIOCHEMICAL CHANGES IN RATS TREATED WITH CHLORPROMAZINE AND ELECTROSHOCKED DURING EARLY POSTNATAL DEVELOPMENT.

133708 02-03

**ELENIUM-POLFA**

ELENIUM-POLFA IN TREATMENT OF ALCOHOL WITHDRAWAL SYNDROMES.

133137 02-11

**ELEVATION**

CENTRAL NERVOUS SYSTEM MECHANISMS RESPONSIBLE FOR BLOOD PRESSURE ELEVATION INDUCED BY P-CHLOROPHENYLALANINE.

119161 02-03

**ELEVATOR**

6-METHOXY 1,2,3,4 TETRAHYDRO-BETA-CARBOLINE -- A SEROTONIN ELEVATOR.

124272 02-03

**ELIMINATION**

ACCUMULATION AND ELIMINATION OF A NOVEL METABOLITE DURING CHRONIC ADMINISTRATION OF THE PHENOTHIAZINE DRUG PERAZINE TO RATS.

121198 02-03

**EMBRYO**

TRANSFORMATION OF FISCHER RAT EMBRYO CELLS BY THE COMBINED ACTION OF MURINE LEUKEMIA VIRUS AND (-) TRANS-DELTA-9-TETRAHYDROCANNABINOL.

121287 02-03

**EMBRYONIC**

EFFECT OF MATERNALLY INJECTED SODIUM PENTOBARBITAL DURING THE EMBRYONIC PERIOD OF GESTATION ON LIVER GLYCOGEN LEVELS IN THE RAT FETUS.

122236 02-03

**EMERGENCIES**

USE OF PERPHENAZINE IN PSYCHIATRIC EMERGENCIES: THE CONCEPT OF CHEMICAL RESTRAINT.

132957 02-17

**EMG**

THE EEG AND BEHAVIORAL CONTINUUM OF THE CROCODILIAN CAIMAN-SCLEROPS. 2. EEG AND EMG SPIKE ACTIVITY.

124225 02-03

**EMOTIONAL**

THE STABILITY AND SENSITIVITY OF MEASURES OF THOUGHT, PERCEPTION AND EMOTIONAL AROUSAL.

120118 02-08

A PRELIMINARY STUDY OF SELECTED EMOTIONAL CHANGES IN PARKINSONIANS ON L-DOPA THERAPY.

125809 02-14

EFFECTS OF PSYCHOTROPIC DRUGS ON EMOTIONAL BEHAVIOR IN RATS WITH LIMBIC LESIONS, WITH SPECIAL REFERENCE TO OLFACTORY BULB ABLATIONS.

128458 02-04

**EMOTIONALLY**

LITHIUM CARBONATE IN EMOTIONALLY UNSTABLE CHARACTER DISORDER.

126232 02-09

**EMPLOYS**

THE EFFECTS OF CHOLINERGIC AGENTS UPON BEHAVIOR CONTROLLED BY AN AVOIDANCE SCHEDULE THAT EMPLOYS SIGNAL RESPONSE INDEPENDENT SHOCK.

131449 02-04

**ENANTHATE**

CLINICAL TESTING OF A RETARD NEUROLEPTIC: FLUPHENAZINE ENANTHATE (MODITEN-RETARD, SQUIBB LAB.).

122306 02-07

PRELIMINARY STUDY OF PERPHENAZINE ENANTHATE IN THE TREATMENT OF CHRONIC SCHIZOPHRENIA.

133261 02-07

COMPARISON OF PERPHENAZINE (TRILAFON TABLETS) WITH PERPHENAZINE ENANTHATE (TRILAFON DEPOT INJECTION) IN A DOUBLE-BLIND TRIAL.

133351 02-08

**ENCEPHALOL**

A CLINICAL STUDY OF ENCEPHALOL IN GERIATRICS.

132919 02-11

**ENCEPHALITOGENIC**

INTERACTION OF HALLUCINOGENIC DRUGS WITH ENCEPHALITOGENIC PROTEIN OF MYELIN.

128457 02-13

**ENDINGS**

EFFECTS OF PHENOTHIAZINES ON AMINO ACID TRANSPORT AND PROTEIN SYNTHESIS IN ISOLATED NERVE ENDINGS.

119056 02-03

**ENDOCRINE**

DISSOCIATION OF THE BEHAVIOURAL AND ENDOCRINE EFFECTS OF LYSINE VASOPRESSIN BY TRYPTIC DIGESTION.

133753 02-04

**ENDOGENOUS**

THE BLACK CLOUD: THE RECOGNITION AND TREATMENT OF ENDOGENOUS DEPRESSION IN GENERAL PRACTICE.

122095 02-17

**ENDOSCOPY**

DIAZEPAM AND MORPHINE AS PREMEDICATION FOR GASTROINTESTINAL ENDOSCOPY.

120835 02-13

**ENHANCEMENT**

ENHANCEMENT OF PROGRESSIVE-RATIO PERFORMANCE BY CHLORDIAZEPOXIDE AND PHENOBARBITAL.

133725 02-04

**ENHANCES**

MORPHINE ENHANCES LATERAL HYPOTHALAMIC SELF-STIMULATION IN THE RAT.

121882 02-04



## Subject Index

- ENTRY**  
SPECIFICITY OF THE EFFECT OF LITHIUM INJECTIONS ON THE ENTRY OF CARBON ATOMS OF GLUCOSE INTO MOUSE BRAIN IN VIVO. 132777 02-03
- ENVIRONMENT**  
AN ANALYSIS OF DRUG EFFECTS IN MICE EXPOSED TO A SIMPLE NOVEL ENVIRONMENT. 124153 02-04
- ENVIRONMENTAL**  
THE EFFECTS OF ENVIRONMENTAL ISOLATION ON BEHAVIOR AND REGIONAL RAT BRAIN TYROSINE HYDROXYLASE AND TRYPTOPHAN HYDROXYLASE ACTIVITIES. 133715 02-03
- ENZYME**  
INDUCTION OR REDUCTION OF CATECHOLAMINE ENZYMES: REGULATION OF CATECHOLAMINE TURNOVER BY VARIATIONS OF ENZYME LEVELS. 122222 02-03
- ENZYMES**  
EFFECTS OF CHLORPROMAZINE FREE RADICAL ON BRAIN AND MICROSOMAL ENZYMES. 118913 02-03  
DRUG-INDUCED ALTERATIONS IN THE ACTIVITY OF RAT BRAIN CHOLINERGIC ENZYMES: I. IN VITRO AND IN VIVO EFFECT OF AMPHETAMINE. 120230 02-03  
BICUCULLINE AND GABA METABOLIZING ENZYMES. 120809 02-03  
EFFECT OF CARBARYL (1-NAPHTHYL-N-METHYLCARBAMATE) ON PENTOBARBITAL INDUCED SLEEPING TIME AND SOME LIVER MICROSOMAL ENZYMES IN WHITE LEGHORN COCKERELS. 121836 02-03  
INDUCTION OR REDUCTION OF CATECHOLAMINE ENZYMES: REGULATION OF CATECHOLAMINE TURNOVER BY VARIATIONS OF ENZYME LEVELS. 122222 02-03  
AMPHETAMINE AGGREGATION EFFECT IN MICE UNDER CONDITIONS OF ALTERED MICROSOMAL ENZYMES. 133181 02-05
- EPHEDRINE**  
THE CENTRAL HYPOTENSIVE ACTION OF AMPHETAMINE, EPHEDRINE, PHENTERMINE, CHLORPHENTERMINE AND FENFLURAMINE. 122446 02-03
- EPILEPSY**  
ELECTROENCEPHALOGRAPHIC ACTIVATION WITH SLEEP AND METHOMEXITAL: COMPARATIVE USEFULNESS IN THE DIAGNOSIS OF EPILEPSY. 122253 02-14  
THE ACTION OF SOME ANTICONVULSANT DRUGS ON COBALT INDUCED EPILEPSY AND ON THE BEMEGRIDE THRESHOLD IN ALERT CATS. 123631 02-03  
OBSERVATIONS ON THE RELATION OF MIGRAINE AND EPILEPSY: AN ELECTROENCEPHALOGRAPHIC, PSYCHOLOGICAL, AND CLINICAL STUDY USING ORAL TYRAMINE. 123637 02-13  
FOLLOWUP RESULTS OVER AN INTERVAL OF 9 YEARS WITH CARBAMAZEPINE THERAPY IN EPILEPSY. 133207 02-11
- EPILEPTIC**  
RELATIONSHIPS BETWEEN SERUM AND CEREBROSPINAL FLUID ANTICONVULSANT DRUG AND FOLIC ACID CONCENTRATIONS IN EPILEPTIC PATIENTS. 132710 02-13
- EPILEPTIFORM**  
EFFECTS OF DIPHENYLHYDANTOIN AND OTHER ANTIEPILEPTIC DRUGS ON EPILEPTIFORM ACTIVITY AND PURKINJE CELL DISCHARGE RATES. 123632 02-03
- EPISODES**  
HYPERTENSIVE EPISODES AFTER ADDING METHYLPHENIDATE (RITALIN) TO TRICYCLIC ANTIDEPRESSANTS: (REPORT OF THREE CASES AND REVIEW OF CLINICAL ADVANTAGES. 131348 02-15
- EQUAL**  
BRAIN CONCENTRATIONS OF LORAZEPAM AND OXAZEPAM AT EQUAL DEGREE OF ANTICONVULSANT ACTIVITY. 119302 02-03
- ERROR**  
ISOLATION OF METABOLITES OF L-DOPA - A POSSIBLE SOURCE OF ERROR. 122165 02-03
- ERYTHROCYTE**  
EFFECTS OF PSYCHOTROPIC DRUGS ON THE ERYTHROCYTE PERMEABILITY TO GLUCOSE AND ETHYLIDENE GLUCOSE. 121402 02-03
- ESCAPE**  
THE ROLE OF THE AMYGDALA IN ESCAPE AVOIDANCE BEHAVIORS. 127344 02-04

## Psychopharmacology Abstracts

- ESERINE**  
THE EFFECTS OF CONJUNCTIVAL INSTILLATION OF ESERINE AND HOMATROPINE ON PUPILLARY REACTIVITY IN SCHIZOPHRENICS. 127520 02-13
- ESOPHAGOGASTROSCOPY**  
PULMONARY COMPLICATIONS AFTER ESOPHAGOGASTROSCOPY USING DIAZEPAM. 120200 02-15
- ESTRADIOL**  
DIFFERENTIAL ANTAGONISM, BY MER-25, OF BEHAVIORAL AND MORPHOLOGICAL EFFECTS OF ESTRADIOL BENZOATE IN RATS. 133714 02-04
- ESTROGEN**  
ESTROGEN - IMIPRAMINE INTERACTION. 128878 02-15
- ETHANOL**  
EFFECTS OF CATECHOLAMINE SYNTHESIS INHIBITION ON ETHANOL NARCOSIS IN MICE. 118988 02-03  
METABOLIC AND PHARMACOLOGIC INTERACTION OF ETHANOL AND METRONIDAZOLE IN THE RAT. 119000 02-03  
ETHANOL CONSUMPTION BY RATS UNDER DIFFERENT LIGHTING CONDITIONS. 120399 02-05  
THE METABOLISM OF ETHANOL AND ITS METABOLIC EFFECTS. 120925 02-13  
MIXED FUNCTION OXIDASE AND ETHANOL METABOLISM IN PERFUSED RAT LIVER. 121546 02-03  
EFFECTS OF CHLORDIAZEPoxide AND ETHANOL ON THE EXTINCTION OF A CONDITIONED TASTE AVERSION. 130364 02-04  
ETHANOL PREFERENCE IN THE RAT: INTERACTIONS BETWEEN BRAIN SEROTONIN AND ETHANOL, ACETALDEHYDE, PARALDEHYDE, 5-HTP AND 5-HTOL. 132682 02-04  
EFFECTS OF ADRENERGIC BLOCKADE ON CARDIOVASCULAR RESPONSES TO ETHANOL AND ACETALDEHYDE. 133301 02-03  
INFLUENCE OF ALCOHOL INTAKE, LENGTH OF ABSTINENCE AND MEPROBAMATE ON THE RATE OF ETHANOL METABOLISM IN MAN. 133599 02-11  
ETHANOL METABOLISM IN VIVO AND THE ROLE OF HEPATIC MICROSOMAL ETHANOL OXIDATION. 133605 02-03  
SYNERGY OF ETHANOL AND PUTATIVE NEUROTRANSMITTERS: GLYCINE AND SERINE. 134043 02-03
- ETHCHLORVYNOL**  
FATAL IMMUNE THROMBOCYTOPENIA INDUCED BY ETHCHLORVYNOL. 118898 02-15  
THE ANALYTICAL TOXICOLOGY OF ETHCHLORVYNOL. (PH.D. DISSERTATION). 130184 02-06
- ETHEREAL**  
CHEMICAL SYNTHESIS AND ANALGESIC EFFECT OF MORPHINE ETHEREAL SULFATES. 119052 02-03
- ETHYL-ALCOHOL**  
DELTA9-TETRAHYDROCANNABINOL AND ETHYL-ALCOHOL: EVIDENCE FOR CROSS-TOLERANCE IN THE RAT. 122078 02-04
- ETHYLIDENE**  
EFFECTS OF PSYCHOTROPIC DRUGS ON THE ERYTHROCYTE PERMEABILITY TO GLUCOSE AND ETHYLIDENE GLUCOSE. 121402 02-03
- ETHYLMORPHINE**  
INHIBITION BY ETHYLMORPHINE AND PENTOBARBITONE IN VITRO OF THE METABOLISM OF (UREYL-14C)TOLBUTAMIDE BY HEPATIC MICROSOMAL PREPARATIONS FROM MALE AND FEMALE RATS TREATED WITH PHENOBARBITONE. 121181 02-03
- ETONITAZENE**  
AGE AND LACK OF HANDLING AS FACTORS IN THE CONSUMPTION OF AN ETONITAZENE SOLUTION BY NAIVE RATS. 133133 02-04
- EVALUATED**  
MBD TREATMENT EVALUATED. 120839 02-11
- EVALUATING**  
EVALUATING THE LONG-TERM NEED FOR ANTIPARKINSON DRUGS BY CHRONIC SCHIZOPHRENICS. 120699 02-08

**EVALUATION**

- CLINICAL EVALUATION OF A NEW PSYCHOTROPIC DRUG, Y-4153 - COMPARATIVE STUDY WITH CHLORPROMAZINE USING A DOUBLE-BLIND METHOD. 120632 02-08
- A COMPARATIVE EVALUATION OF TWO HYPNOTIC AGENTS IN GENERAL PRACTICE PATIENTS WITH INSOMNIA. 122430 02-07
- TRYPTOPHAN TRIALS IN TESTS FOR EVALUATION OF ANTIDEPRESSANTS. 125257 02-04
- A CONTROLLED EVALUATION OF LITHIUM PROPHYLAXIS IN AFFECTIVE DISORDERS. 126205 02-09
- A CLINICAL EVALUATION OF THE HYPNOTIC EFFICACY AND SAFETY OF MEBUTAMATE. 128341 02-11
- CLINICAL EVALUATION OF THE EFFICACY OF MOLINDONE AND CHLORDIAZEPoxide IN ANXIOUS OUTPATIENTS. 132717 02-10
- EVALUATION OF PIPERACETAZINE (GUIDE) INJECTION IN ACUTE SCHIZOPHRENICS. 132896 02-08
- A QUALITATIVE AND QUANTITATIVE EVALUATION OF AMANTADINE IN THE TREATMENT OF PARKINSONS DISEASE. 133071 02-11
- CLINICAL EVALUATION OF ANALGESIC DRUGS. 133141 02-13
- CLINICAL EVALUATION OF SINEQUAN. 133321 02-10
- GP-45795: A CONTROLLED EVALUATION IN CHRONIC SCHIZOPHRENIC PATIENTS. 134197 02-08

**EVIDENCE**

- DELTA<sup>9</sup>-TETRAHYDROCANNABINOL AND ETHYL-ALCOHOL: EVIDENCE FOR CROSS-TOLERANCE IN THE RAT. 122078 02-04
- EVIDENCE THAT METHADONE BLOCKS DOPAMINE RECEPTORS IN THE BRAIN. 122284 02-03
- THYROID IMIPRAMINE CLINICAL AND CHEMICAL INTERACTION: EVIDENCE FOR A RECEPTOR DEFICIT IN DEPRESSION. 127216 02-09
- EVIDENCE FOR A CONSOLIDATION PROCESS FOLLOWING IMPRINTING IN THE ONE-DAY-OLD CHICK. 132159 02-04

**EVOKED**

- EFFECT OF MELANOCYTE STIMULATING HORMONE ON THE CORTICAL SOMATIC EVOKED RESPONSES IN MAN. 121280 02-13
- THE EFFECT OF MORPHINE ON PRIMARY SOMATOSENSORY EVOKED RESPONSES IN THE RAT CEREBRAL CORTEX. 121281 02-04
- EFFECTS OF PENTOBARBITAL ON THE VISUAL EVOKED RESPONSE IN THE AVIAN OPTIC TECTUM. 122012 02-03
- TIME DRUG MODULATIONS OF PHOTICALLY EVOKED AFTER-DISCHARGE PATTERNS. 122062 02-03
- EFFECT OF MINOR AND MAJOR TRANQUILIZERS ON SOMATOSENSORY EVOKED POTENTIALS. 124152 02-13
- EFFECT OF NEUROTROPIC AGENTS ON CHANGES IN BIOELECTRIC ACTIVITY OF THE RENAL NERVE, EVOKED BY STIMULATION OF THE DESCENDING COLUMNS OF THE SPINAL CORD. 125262 02-03
- SOME FEATURES OF THE AUDITORY EVOKED RESPONSE IN SCHIZOPHRENICS. 126225 02-13
- SOMATOSENSORY EVOKED POTENTIAL: AN OBJECTIVE INDICATOR OF THE THERAPY EFFICACY OF A NEW PSYCHOTROPIC DRUG, CLORAZEPATE DIPOTASSIUM (TRANXENE). 132953 02-07
- EFFECT OF STIMULATORY DRUGS ON THE SOMATOSENSORY EVOKED POTENTIAL IN MAN. 133348 02-13
- EFFECT OF DIISOPROPYL PHOSPHOROFUORIDATE (DFP) ON THE SOMATOSENSORY EVOKED POTENTIALS IN RATS. 133380 02-04

**EX-10-029**

- A DOUBLE-BLIND COMPARISON OF THE EFFICACY OF EX-10-029 AND TRIHEXYPHENIDYL HYDROCHLORIDE IN RELIEVING DRUG-INDUCED PARKINSONIAN SYMPTOMS. 132956 02-07

**EXCHANGEABILITY**

- EFFECT OF DRUGS ON THE CALCIUM EXCHANGEABILITY IN THE PINEAL GLAND. 133751 02-03

**EXCITABILITY**

- THE MECHANISM OF EXCITABILITY BLOCKADE BY CHLORPROMAZINE. 119162 02-03
- THE EFFECT OF THE GABA ANTAGONISTS BICUCULLINE AND PICROTOXIN ON PRIMARY AFFERENT TERMINAL EXCITABILITY. 121964 02-03

**EXCITABLE**

- EFFECTS OF CHLORPROMAZINE, TRIFLUOPERAZINE, PROMAZINE AND IMIPRAMINE ON THE PROPERTIES OF EXCITABLE MEMBRANES. 125258 02-03

**EXCITANT**

- THE EFFECT OF THE NEURONAL EXCITANT N-METHYL-D-ASPARTATE ON THE METABOLISM OF MOUSE BRAIN AMINO ACIDS LABELLED FROM (14C)BICARBONATE AND L-(U-14C)ASPARTATE. 121965 02-03

**EXCITATION**

- THE EFFECTS OF ANESTHETICS ON SYNAPTIC EXCITATION AND INHIBITION IN THE OLFACTORY BULB. (UNPUBLISHED PAPER). 132508 02-03
- ANTAGONISM OF PENTYLENETETRAZOL EXCITATION BY ANTICONVULSANTS ON SINGLE BRAIN STEM NEURONS. 132676 02-03

**EXCITATORY**

- INTERACTION OF FENFLURAMINE WITH D-AMPHETAMINE INDUCED EXCITATORY BEHAVIOUR AND HYPERTHERMIA. 122443 02-03
- EXCITATORY RESPONSES FOLLOWING INTRACAUDATE INJECTION OF N-METHYL-DL-ASPARTIC ACID. 133302 02-02

**EXCITED**

- A COMPARISON OF LITHIUM CARBONATE AND CHLORPROMAZINE IN THE TREATMENT OF EXCITED SCHIZO-AFFECTIVES. 122662 02-08

**EXCRETION**

- INCREASED CALCIUM AND MAGNESIUM EXCRETION INDUCED BY LITHIUM CARBONATE. 119983 02-03
- DEPRESSION AND MHPG EXCRETION. 120993 02-13
- THE EFFECT OF DIPHENYLDANTOIN ON THE CLINICAL MANIFESTATIONS AND EXCRETION OF 5-HYDROXYINDOLEACETIC ACID IN PARKINSONS DISEASE. 132808 02-11
- EXCRETION OF VANILLYL-MANDELIC ACID, HOMOVANILIC ACID, N-METHYL-NICOTINAMIDE, AND N-METHYL-2-PYRIDONE-5-CARBOXAMIDE IN URINE OF VOLUNTARY TEST PERSONS AND PSYCHIATRIC PATIENTS BEFORE AND AFTER ADMINISTRATION OF METHIONINE. 133265 02-13

**EXPERIENCE**

- LSI, PERSONALITY AND EXPERIENCE. 120479 02-12
- EXPERIENCE WITH PROTHIADEN IN NEUROLOGY. 122082 02-10
- HALOPERIDOL: FIFTEEN YEARS OF CLINICAL EXPERIENCE. 127878 02-17
- AMANTADINE IN PARKINSONS DISEASE: REVIEW OF MORE THAN TWO YEARS EXPERIENCE. 131948 02-11

**EXPERIMENTAL**

- ALTERED NOREPINEPHRINE METABOLISM FOLLOWING EXPERIMENTAL SPINAL CORD INJURY. PART 2: PROTECTION AGAINST TRAUMATIC SPINAL CORD HEMORRHAGIC NECROSIS BY NOREPINEPHRINE SYNTHESIS BLOCKADE WITH ALPHA-METHYL-TYROSINE. 121067 02-03
- LEARNED BEHAVIOR AND LIMBIC SYSTEM ACTIVITY IN EXPERIMENTAL PORPHYRIA. 122706 02-03
- COMMENTS ON GENERALIZATIONS RELATED TO THE EXPERIMENTAL EFFECTS OF AMPHETAMINE. 123008 02-13
- PREVENTION OF TRAUMATIC SHOCK WITH LEVOMEPROMAZINE UNDER EXPERIMENTAL CONDITIONS. 125263 02-03
- FURTHER PHARMACOLOGICAL STUDY ON ANTIAGGRESSIVE, SEDATIVE AND MUSCLE RELAXANT 8-CHLORO-6-PHENYL-4H-5-TRIAZOLOBENZODIAZEPINE (D-40TA) IN EXPERIMENTAL ANIMALS: COMPARATIVE STUDY ON POTENCY AND DURATION. 130909 02-04
- EXPERIMENTAL PSYCHOCLINICAL TREATMENT OF THE SEVERELY MENTALLY RETARDED WITH ARGININE-N-ACETYL-ASPARTATE (AAA). 132772 02-11
- THE EFFECT OF EXPERIMENTAL LOCAL INFLAMMATION ON THE ACTION OF BARBITURATES IN RAT. 133126 02-03
- HISTOENZYMOLOGIC STUDIES OF THE BRAIN TISSUES AND INTERNAL ORGANS OF EXPERIMENTAL ANIMALS IN A SINGULAR ADMINISTRATION OF LSD-25. 133505 02-03

# Subject Index

# Psychopharmacology Abstracts

- EXPERIMENTAL STUDIES ON THE MECHANISM OF RESERPINE ACTION.**  
133959 02-03
- EXPERIMENTALLY**  
THE EFFECTS OF LOW-DOSE COMBINATIONS OF D-AMPHETAMINE AND COCAINE ON EXPERIMENTALLY INDUCED CONFLICT IN THE RAT.  
119173 02-04
- EXPERIMENTS**  
EFFECTS OF PROPRANOLOL, PHENTOLAMINE AND METHYL ATROPINE ON CARDIOVASCULAR FUNCTION IN THE SQUIRREL MONKEY DURING BEHAVIORAL EXPERIMENTS.  
122179 02-03
- EXPLANATION**  
DRUG-INDUCED FACILITATION OF ACTIVE AVOIDANCE: A BEHAVIORAL EXPLANATION.  
131436 02-04
- EXPLORATION**  
CHLORDIAZEPOXIDE MODIFIED EXPLORATION IN RATS.  
120788 02-04
- EXPLORATORY**  
METHYLPHENIDATE INDUCED INHIBITION OF EXPLORATORY BEHAVIOR IN RATS.  
120219 02-04
- EFFECTS OF INTRAHIPPOCAMPAL INJECTIONS WITH METHYLSCOPOLAMINE AND NEOSTIGMINE UPON EXPLORATORY BEHAVIOR IN TWO INBRED MOUSE STRAINS.  
120789 02-04
- EXPOSED**  
AN ANALYSIS OF DRUG EFFECTS IN MICE EXPOSED TO A SIMPLE NOVEL ENVIRONMENT.  
124153 02-04
- EXPOSURE**  
EFFECT OF COLD EXPOSURE ON DRUG ACTION AND HEPATIC DRUG METABOLISM IN THE RAT.  
122247 02-03
- GASTRIC LESIONS INDUCED BY RESTRAINT AND COLD EXPOSURE: ARE CENTRAL ADRENERGIC MECHANISMS INVOLVED. (UNPUBLISHED PAPER).  
129461 02-03
- GASTRIC LESIONS INDUCED BY RESTRAINT AND COLD EXPOSURE: A STUDY OF CENTRAL MONOAMINERGIC MECHANISM. (UNPUBLISHED PAPER).  
132367 02-03
- EXPRESSION**  
EFFECTS OF LITHIUM CHLORIDE ON LEARNED RESPONSES: ACQUISITION, RETENTION, AND EXPRESSION.  
128338 02-04
- EXTENSOR**  
EFFECTS OF GAMMA-HYDROXYBUTYRATE ON CHICK BEHAVIOUR, ELECTROCORTICAL ACTIVITY AND CROSSED EXTENSOR REFLEXES.  
120124 02-05
- EXTENT**  
EXTENT OF PLASMA PROTEIN BINDING OF AMPHETAMINE IN DIFFERENT SPECIES.  
133780 02-13
- EXTINCTION**  
EFFECTS OF ATROPINE SULPHATE ON REPEATED EXTINCTION PERFORMANCE IN HIPPOCAMPECTOMIZED RATS.  
123936 02-04
- EFFECTS OF CHLORDIAZEPOXIDE AND ETHANOL ON THE EXTINCTION OF A CONDITIONED TASTE AVERSION.  
130364 02-04
- EXTRACT**  
COMPARISON OF BEHAVIORAL EFFECTS OF SYNTHETIC (-)-DELTA9-TRANS-TETRAHYDROCANNABINOL AND MARIJUANA EXTRACT DISTILLATE IN CHIMPANZEES.  
122398 02-04
- THE EFFECTS OF A MARIJUANA EXTRACT ON TWO-CHOICE DISCRIMINATION LEARNING IN THE SQUIRREL MONKEY.  
131445 02-04
- EXTRAHEPATIC**  
THE EFFECTS OF PHENOBARBITAL ON BILE SALTS AND BILIRUBIN IN PATIENTS WITH INTRAHEPATIC AND EXTRAHEPATIC CHOLESTASIS.  
121580 02-13
- EXTRAOCULAR**  
RELATIONSHIP BETWEEN EXTRAOCULAR AND PGO ACTIVITY IN THE CAT.  
119534 02-03
- EXTRAPYRAMIDAL**  
INHIBITION OF EXTRAPYRAMIDAL SIDE-EFFECTS OF HALOPERIDOL THROUGH THE JOINT USE OF IMIPRAMINE-TYPE DRUGS.  
134326 02-15
- EYELID**  
EFFECTS OF METHAMPHETAMINE ON WELL-PRACTICED DISCRIMINATION CONDITIONING OF THE EYELID RESPONSE.  
122397 02-14
- FACILITATED**  
REVERSAL LEARNING FACILITATED BY A SINGLE INJECTION OF LYSERGIC ACID DIETHYLAMIDE (LSD-25) IN THE RAT.  
121303 02-04

- FACILITATING**  
INTRAVENOUS DIAZEPAM FOR FACILITATING RELAXATION FOR DESENSITIZATION.  
121397 02-10
- FACILITATION**  
TWENTY-FOUR HOUR PROACTIVE FACILITATION OF AVOIDANCE AND DISCRIMINATION BY PENTYLENETETRAZOL.  
120016 02-04
- DRUG-INDUCED FACILITATION OF ACTIVE AVOIDANCE: A BEHAVIORAL EXPLANATION.  
131436 02-04
- PERMANENT FACILITATION OF AVOIDANCE BEHAVIOR BY D-AMPHETAMINE AND SCOPOLAMINE.  
133377 02-04
- FAILURE**  
FAILURE OF AN OPIATE TO PROTECT MICE AGAINST NALOXONE PRECIPITATED WITHDRAWAL.  
122184 02-04
- FALLACY**  
THE CURE-ALL FALLACY: DANGERS OF OVER PRESCRIBING.  
132623 02-17
- FAMILIES**  
THE CHANGE OF BEHAVIOR PATTERN OF ALCOHOL ADDICTS TREATED WITH CYANAMIDE DOUBLE MEDICATION - OBSERVATIONS BY THEIR FAMILIES.  
129088 02-11
- FAMILY**  
MANIA AS A MESSAGE: TREATMENT WITH FAMILY THERAPY AND LITHIUM CARBONATE.  
130388 02-09
- THE RESILIENCE OF FAMILY PROCESS: EFFECT OF SECOBARBITAL I. METHOD AND FINDINGS. (UNPUBLISHED PAPER).  
134129 02-14
- FAT**  
ACTIVATION AND INHIBITION OF LIPOLYSIS IN ISOLATED FAT CELLS BY VARIOUS INHIBITORS OF CYCLIC-AMP PHOSPHODIESTERASE.  
124170 02-03
- FATAL**  
FATAL IMMUNE THROMBOCYTOPENIA INDUCED BY ETHCHLORVYNOL.  
118898 02-15
- A FATAL CASE INVOLVING METHYLENEDIOXYAMPHETAMINE.  
122440 02-15
- FEEDING**  
AN INVESTIGATION OF AMPHETAMINE ANOREXIA UNDER THREE MOTIVATIONAL CONDITIONS OF FREE FEEDING.  
122956 02-04
- DEFICITS IN FEEDING BEHAVIOR AFTER INTRAVENTRICULAR INJECTION OF 6-HYDROXYDOPAMINE IN RATS.  
133750 02-03
- FEMALE**  
INHIBITION BY ETHYLMORPHINE AND PENTOBARBITONE IN VITRO OF THE METABOLISM OF (UREYL-14C)TOLBUTAMIDE BY HEPATIC MICROSOMAL PREPARATIONS FROM MALE AND FEMALE RATS TREATED WITH PHENOBARBITONE.  
121181 02-03
- FENCICLIDINE**  
NARCOSIS IN ELECTROSHOCK WITH A DERIVATIVE OF FENCICLIDINE.  
132988 02-13
- FENFLURAMINE**  
ANTI-OBESITY ACTION OF FENFLURAMINE.  
118964 02-13
- THE EFFECTS OF SELECTIVE LESIONING OF BRAIN SEROTONIN OR CATECHOLAMINE CONTAINING NEURONES ON THE ANORECTIC ACTIVITY OF FENFLURAMINE AND AMPHETAMINE.  
122243 02-03
- INTERACTION OF FENFLURAMINE WITH D-AMPHETAMINE INDUCED EXCITATORY BEHAVIOUR AND HYPERTHERMIA.  
122443 02-03
- THE CENTRAL HYPOTENSIVE ACTION OF AMPHETAMINE, EPHEDRINE, PHENTERMINE, CHLORPHENTERMINE AND FENFLURAMINE.  
122446 02-03
- METHAMPHETAMINE, FENFLURAMINE AND THEIR METABOLITES: IDENTIFICATION AND SUBCELLULAR LOCALIZATION IN RAT BRAIN HOMOGENATES. (UNPUBLISHED PAPER).  
126248 02-01
- EFFECT OF FENFLURAMINE, CHLORPHENTERMINE AND RELATED COMPOUNDS ON THE BEHAVIOR OF AGGRESSIVE MICE.  
133131 02-04
- FERTILE**  
THE HAZARD OF NEUROTROPIC DRUGS IN THE FERTILE YEARS.  
121578 02-15
- FETUS**  
EFFECT OF MATERNALLY INJECTED SODIUM PENTOBARBITAL DURING THE EMBRYONIC PERIOD OF GESTATION ON LIVER GLYCOGEN LEVELS IN THE RAT FETUS.  
122236 02-03

- FIELDS**  
MASKED DEPRESSION IN VARIOUS FIELDS IN CLINICAL MEDICINE - FROM THE STANDPOINT IN INTERNAL MEDICINE ESPECIALLY IN THE FIELDS OF TREATMENT. 125999 02-09
- FIGHTING**  
SHOCK ELICITED FIGHTING AND DELTA9-TETRAHYDROCANNABINOL. 122194 02-04
- FISCHER**  
TRANSFORMATION OF FISCHER RAT EMBRYO CELLS BY THE COMBINED ACTION OF MURINE LEUKEMIA VIRUS AND (-) TRANS-DELTA9-TETRAHYDROCANNABINOL. 121287 02-03
- FISH**  
PENICILLIN INDUCED SEIZURE ACTIVITY IN THE HATCHET FISH. 121966 02-03
- FIXATION**  
CYCLIC-AMP IN BRAIN AREAS: EFFECTS OF AMPHETAMINE AND NOREPINEPHRINE ASSESSED THROUGH THE USE OF MICROWAVE RADIATION AS A MEANS OF TISSUE FIXATION. 133713 02-03
- FIXED**  
THE USE OF A FIXED DOSAGE COMBINATION OF AMITRIPTYLINE AND CHLORDIAZEPOXIDE IN THE TREATMENT OF PATIENTS SUFFERING FROM ANXIETY AND DEPRESSION. 132754 02-09
- FIXED-RATIO**  
THE DEVELOPMENT OF FIXED-RATIO PERFORMANCE UNDER THE INFLUENCE OF RIBONUCLEIC ACID. 129423 02-04
- FLICKER**  
EFFECT OF BOL ON THE LSD INDUCED ALTERATION OF FLICKER DISCRIMINATION. 133655 02-04
- FLUID**  
STEADY-STATE LEVELS OF PROBENECID AND THEIR RELATION TO ACID MONOAMINE METABOLITES IN HUMAN CEREBROSPINAL FLUID. 119985 02-03  
CEREBROSPINAL FLUID LEVELS OF AMHPG IN AFFECTIVE DISORDERS. 124330 02-13  
THE EFFECT OF LITHIUM CHLORIDE ON THE ELECTROLYTE COMPOSITION OF CEREBROSPINAL FLUID OF THE RAT. 130355 02-03  
RELATIONSHIPS BETWEEN SERUM AND CEREBROSPINAL FLUID ANTICONVULSANT DRUG AND FOLIC ACID CONCENTRATIONS IN EPILEPTIC PATIENTS. 132710 02-13
- FLUIDS**  
BLOOD LEVELS OF ANTIEPILEPTIC DRUGS - CHEMICAL DETERMINATION OF ANTIEPILEPTIC DRUGS IN BODY FLUIDS. 129211 02-06  
DEVELOPMENT OF METHODOLOGY FOR ASSAY OF CANNABINOIDS IN BODY FLUIDS AND TISSUES. (UNPUBLISHED PAPER). 132370 02-06
- FLUORESCENT**  
LACK OF TOXIC EFFECT OF GUANETHIDINE ON NERVE CELLS AND SMALL INTENSELY FLUORESCENT CELLS IN CULTURES OF SYMPATHETIC GANGLIA OF NEWBORN RATS. 132656 02-03
- FLUOXYMESTERONE**  
NICOTINIC ACID, THIORIDAZINE, FLUOXYMESTERONE AND THEIR COMBINATIONS IN HOSPITALIZED GERIATRIC PATIENTS: A SYSTEMATIC CLINICAL STUDY. 130668 02-11
- FLUPHENAZINE**  
COMPARATIVE TRIAL OF LOW DOSE HALOPERIDOL AND FLUPHENAZINE IN OFFICE PATIENTS. 120727 02-07  
CLINICAL TESTING OF A RETARD NEUROLEPTIC; FLUPHENAZINE ENANTHATE (MODITEN-RETARD, SQUIBB LAB.). 122306 02-07  
MORPHOLOGICAL DATA ON THE TOXICITY OF FLUPHENAZINE. 125259 02-05
- FLURAZEPAM**  
FLURAZEPAM: STUDY OF ITS HYPNOTIC PROPERTIES IN NORMAL SUBJECTS. 133221 02-07
- FLUSPIRILENE**  
FLUSPIRILENE AND PIPOTHAZINE UNDECYLENATE, TWO LONG-ACTING INJECTABLE NEUROLEPTICS: A DOUBLE-BLIND CONTROLLED TRIAL IN RESIDUAL SCHIZOPHRENIA. 121544 02-08  
FLUSPIRILENE IN THE TREATMENT OF CHRONIC SCHIZOPHRENIC OUTPATIENTS. 132718 02-08  
FLUSPIRILENE, AN INJECTABLE, AND PENFLURIDOL, AN ORAL LONG-LASTING, NEUROLEPTIC. 134309 02-08
- FOLIC**  
RELATIONSHIPS BETWEEN SERUM AND CEREBROSPINAL FLUID ANTICONVULSANT DRUG AND FOLIC ACID CONCENTRATIONS IN EPILEPTIC PATIENTS. 132710 02-13
- FOLLOWUP**  
FOLLOWUP RESULTS OVER AN INTERVAL OF 9 YEARS WITH CARBAMAZEPINE THERAPY IN EPILEPSY. 133207 02-11
- FOOD**  
CONDITIONING OF FOOD AVERSIONS BY INJECTIONS OF PSYCHOACTIVE DRUGS. 123983 02-04
- FOREBRAIN**  
SYNAPTOSOMES FROM FOREBRAINS OF RATS WITH MIDBRAIN RAPHE LESIONS: SELECTIVE REDUCTION OF SEROTONIN UPTAKE. 124188 02-03
- FORMATION**  
5,6 DIHYDROXYINDOLE FORMATION FROM OXIDIZED 6-HYDROXYDOPAMINE. 122237 02-03  
INTERACTION OF HOUSING CONDITIONS AND CYCLOHEXIMIDE ON MEMORY FORMATION. 131448 02-04  
INTERACTION OF THE EFFECT OF LYSERGIC ACID DIETHYLAMIDE AND AMINAZINE AT THE LEVEL OF INDIVIDUAL NEURONS OF THE MIDBRAIN RETICULAR FORMATION. 134457 02-03
- FORMICA-RUFA**  
THE EFFECTS OF SOME DRUGS AFFECTING BRAIN 5-HT ON THE AGGRESSIVE BEHAVIOR AND SPONTANEOUS ELECTRICAL ACTIVITY OF THE CENTRAL NERVOUS SYSTEM OF THE ANT, FORMICA-RUFA. 120812 02-04
- FORMULATIONS**  
ORAL AND PARENTERAL FORMULATIONS OF MARIJUANA CONSTITUENTS. 121284 02-06
- POWLS**  
CENTRAL EFFECTS OF AMINES IN ADULT FOWLS. 121297 02-03
- FRACTIONATION**  
FRACTIONATION BY ZONAL CENTRIFUGATION OF BRAIN OF NORMAL RATS AND RATS TREATED WITH MORPHINE. 132642 02-03
- FRACTIONS**  
INHIBITORY EFFECTS OF CHRONIC ADMINISTRATION OF MORPHINE ON URIDINE AND THYMIDINE INCORPORATING ABILITIES OF MOUSE LIVER AND BRAIN SUBCELLULAR FRACTIONS. 122245 02-03  
OXIDATION AND GLUCURONIDATION OF CERTAIN DRUGS IN VARIOUS SUBCELLULAR FRACTIONS OF RAT LIVER: BINDING OF DESMETHYLIMIPRAMINE AND HEXOBARBITAL TO CYTOCHROME-P-450 AND OXIDATION AND GLUCURONIDATION OF DESMETHYLIMIPRAMINE, AMINOPYRINE, P-NITROPHENOL AND 1-NAPHTHOL. 124120 02-03
- FRAGMENTOGRAPHY**  
NOREPINEPHRINE AND DOPAMINE: ASSAY BY MASS FRAGMENTOGRAPHY IN THE PICOMOLE RANGE. 120529 02-01
- FREE**  
EFFECTS OF CHLORPROMAZINE FREE RADICAL ON BRAIN AND MICROSOMAL ENZYMES. 118913 02-03  
AN INVESTIGATION OF AMPHETAMINE ANOREXIA UNDER THREE MOTIVATIONAL CONDITIONS OF FREE FEEDING. 122956 02-04
- FREQUENCY**  
MASKED DEPRESSION IN INTERNAL MEDICINE - THE FREQUENCY AND CLINICAL CHARACTERISTICS. 125862 02-09
- FUNCTION**  
HEROIN INDUCED PULMONARY EDEMA: SEQUENTIAL STUDIES OF PULMONARY FUNCTION. 118897 02-15  
STRENGTH OF THE NERVOUS SYSTEM AS A FUNCTION OF PERSONALITY TYPE AND LEVEL OF AROUSAL. 119068 02-14  
THYROID FUNCTION AND THE RESPONSE TO LIOTHYRONINE IN DEPRESSION. 120994 02-13  
MIXED FUNCTION OXIDASE AND ETHANOL METABOLISM IN PERFUSED RAT LIVER. 121546 02-03  
EFFECTS OF PROPRANOLOL, PHENTOLAMINE AND METHYL ATROPINE ON CARDIOVASCULAR FUNCTION IN THE SQUIRREL MONKEY DURING BEHAVIORAL EXPERIMENTS. 122179 02-03



## Subject Index

- THE DOSE-RESPONSE EFFECT OF AMPHETAMINE UPON AVOIDANCE BEHAVIOR IN THE RAT SEEN AS A FUNCTION OF INCREASING STEREOTYPY. 123935 02-04
- ON THE ADMINISTRATION OF PSYCHOTROPIC DRUGS AND ITS SIDE-EFFECTS DETECTED BY LIVER FUNCTION TEST. 128952 02-08
- EFFECTS OF LITHIUM ON THYROID FUNCTION. 129445 02-13
- LOW DOSAGE PHENOTHIAZINE THERAPY: EFFECTIVE ANXIOLYTIC ACTION WITHOUT IMPAIRMENT TO INTELLECTUAL FUNCTION. 132715 02-10
- FUNCTIONAL**  
EFFECT OF SEDUXEN ON THE FUNCTIONAL STATE OF THE ADRENAL CORTEX AND THYROID GLAND. 125265 02-04
- FUNCTIONS**  
MARIHUANA AND ALCOHOL: TIME PRODUCTION AND MEMORY FUNCTIONS. 129830 02-14
- FUR**  
PASSAGE OF 3H-CHLORPROMAZINE AND 3H-DELTA9-TETRAHYDROCANNABINOL INTO THE HAIR (FUR) OF VARIOUS MAMMALS. 123033 02-03
- GABA**  
BICUCULLINE AND GABA METABOLIZING ENZYMES. 120809 02-03
- THE EFFECT OF THE GABA ANTAGONISTS BICUCULLINE AND PICROTOXIN ON PRIMARY AFFERENT TERMINAL EXCITABILITY. 121964 02-03
- INHIBITION OF GABA TRANSAMINASE AND SLEEP IN THE RAT. 124160 02-03
- GAIN**  
LITHIUM, WEIGHT GAIN, AND SERUM INSULIN IN MANIC-DEPRESSIVE PATIENTS. 134310 02-15
- GALACTORRHEA**  
TRANQUILIZER INDUCED GALACTORRHEA. 121621 02-15
- GAMMA-AMINOBUTYRIC**  
EFFECT OF AMINAZINE AND IMISINE ON METABOLISM OF DICARBOXYLIC AMINO ACIDS AND THEIR DERIVATIVES (GLUTAMINE AND GAMMA-AMINOBUTYRIC ACID) IN CAT BRAIN. 121876 02-03
- THE INFLUENCE OF SEMICARBAZIDE INDUCED DEPLETION OF GAMMA-AMINOBUTYRIC ACID ON PRESYNAPTIC INHIBITION. 121963 02-03
- GAMMA-HYDROXYBUTYRATE**  
EFFECTS OF GAMMA-HYDROXYBUTYRATE ON CHICK BEHAVIOUR, ELECTROCORTICAL ACTIVITY AND CROSSED EXTENSOR REFLEXES. 120124 02-05
- EFFECT OF GAMMA-HYDROXYBUTYRATE ON DOPAMINE AND DOPAMINE METABOLITES IN THE RAT STRIATUM. 121522 02-03
- GAMMA-HYDROXYBUTYRIC**  
THE ACTION OF GAMMA-HYDROXYBUTYRIC ACID ON CEREBRAL GLUCOSE METABOLISM. 121074 02-02
- GANGLIA**  
STRUCTURAL AND ULTRASTRUCTURAL CHANGES IN DEVELOPING SYMPATHETIC GANGLIA INDUCED BY GUANETHIDINE. 132645 02-03
- LACK OF TOXIC EFFECT OF GUANETHIDINE ON NERVE CELLS AND SMALL INTENSELY FLUORESCENT CELLS IN CULTURES OF SYMPATHETIC GANGLIA OF NEWBORN RATS. 132656 02-03
- GANGLION**  
PRELIMINARY NOTE: CHANGES IN RNA CONTENT OF SYMPATHETIC GANGLION CELLS OF RESERPINE PRETREATED RATS. 121283 02-03
- THE EFFECTS OF PROCAINE, AMYLOBARBITONE ON DRUG-INDUCED CHANGES IN THE SURFACE POTENTIALS OF AN ISOLATED SYMPATHETIC GANGLION. 121302 02-03
- GASTRIC**  
GASTRIC LESIONS INDUCED BY RESTRAINT AND COLD EXPOSURE: ARE CENTRAL ADRENERGIC MECHANISMS INVOLVED. (UNPUBLISHED PAPER). 129461 02-03
- GASTRIC LESIONS INDUCED BY RESTRAINT AND COLD EXPOSURE: A STUDY OF CENTRAL MONOAMINERGIC MECHANISM. (UNPUBLISHED PAPER). 132367 02-03
- GASTROINTESTINAL**  
DIAZEPAM AND MORPHINE AS PREMEDICATION FOR GASTROINTESTINAL ENDOSCOPY. 120835 02-13

## Psychopharmacology Abstracts

- G8-94**  
CLINICAL AND EEG EFFECTS OF G8-94, A TETRACYCLIC ANTIDEPRESSANT (EEG MODEL IN DISCOVERY OF A NEW PSYCHOTROPIC DRUG). 132894 02-07
- GENERALIZATIONS**  
COMMENTS ON GENERALIZATIONS RELATED TO THE EXPERIMENTAL EFFECTS OF AMPHETAMINE. 123008 02-13
- GENETICALLY**  
REDUCTION OF ANXIETY IN GENETICALLY TIMID DOGS: DRUG-INDUCED SCHIZOKINESIS AND AUTOKINESIS. 132527 02-04
- GERIATRIC**  
BUTISOL SODIUM VS. LIBRIUM AMONG GERIATRIC AND YOUNGER OUTPATIENTS AND NURSING HOME PATIENTS. 123885 02-10
- NICOTINIC ACID, THIORIDAZINE, FLUOXYMESTERONE AND THEIR COMBINATIONS IN HOSPITALIZED GERIATRIC PATIENTS: A SYSTEMATIC CLINICAL STUDY. 130668 02-11
- GERIATRIC PHARMACOLOGY. 133857 02-13
- GERIATRICS**  
A CLINICAL STUDY OF ENCEPHALOL IN GERIATRICS. 132919 02-11
- GESTATION**  
EFFECT OF MATERNALLY INJECTED SODIUM PENTOBARBITAL DURING THE EMBRYONIC PERIOD OF GESTATION ON LIVER GLYCOGEN LEVELS IN THE RAT FETUS. 122236 02-03
- GILLES-DE-LA-TOURETTE**  
NEUROPSYCHOLOGICAL TEST PERFORMANCE BEFORE AND AFTER SYMPTOM REMOVAL IN A CHILD WITH GILLES-DE-LA-TOURETTE SYNDROME. 125802 02-14
- GILLES-DE-LA-TOURETTES**  
NOTES ON A CASE OF TICS (GILLES-DE-LA-TOURETTES SYNDROME) TREATED BY HALOPERIDOL. 133011 02-14
- GLAND**  
EFFECT OF SEDUXEN ON THE FUNCTIONAL STATE OF THE ADRENAL CORTEX AND THYROID GLAND. 125265 02-04
- EFFECT OF DRUGS ON THE CALCIUM EXCHANGEABILITY IN THE PINEAL GLAND. 133751 02-03
- GLOBUS-PALLIDUS**  
ON THE INVOLVEMENT OF THE CAUDATE-PUTAMEN, GLOBUS-PALLIDUS AND SUBSTANTIA-NIGRA WITH NEUROLEPTIC AND CHOLINERGIC MODIFICATION OF LOCOMOTOR ACTIVITY. 121274 02-03
- GLUCAGON**  
MICROCIRCULATORY RESPONSES IN THE BAT WING TO GLUCAGON WITH AND WITHOUT BARBITURATE ANESTHESIA (36515). 121289 02-03
- GLUCOSE**  
THE ACTION OF GAMMA-HYDROXYBUTYRIC ACID ON CEREBRAL GLUCOSE METABOLISM. 121074 02-02
- EFFECTS OF PSYCHOTROPIC DRUGS ON THE ERYTHROCYTE PERMEABILITY TO GLUCOSE AND ETHYLIDENE GLUCOSE. 121402 02-03
- FALSE GLUCOSE VALUES WITH USE OF OXAZEPAM. 126339 02-15
- CHLORPROMAZINE INDUCED ALTERNATIONS OF CARBOHYDRATE METABOLISM: EFFECT OF CHLORPROMAZINE PRETREATMENT ON THE INSULIN RESPONSE TO GLUCOSE AND TOLBUTAMIDE IN THE ADRENALECTOMIZED RAT. (PH.D. DISSERTATION). 130182 02-03
- SPECIFICITY OF THE EFFECT OF LITHIUM INJECTIONS ON THE ENTRY OF CARBON ATOMS OF GLUCOSE INTO MOUSE BRAIN IN VIVO. 132777 02-03
- GLUCURONIDATION**  
OXIDATION AND GLUCURONIDATION OF CERTAIN DRUGS IN VARIOUS SUBCELLULAR FRACTIONS OF RAT LIVER: BINDING OF DESMETHYLIMIPRAMINE AND HEXOBARBITAL TO CYTOCHROME-P-450 AND OXIDATION AND GLUCURONIDATION OF DESMETHYLIMIPRAMINE, AMINOPYRINE, P-NITROPHENOL AND 1-NAPHTHOL. 124120 02-03
- GLUTAMINE**  
EFFECT OF AMINAZINE AND IMISINE ON METABOLISM OF DICARBOXYLIC AMINO ACIDS AND THEIR DERIVATIVES (GLUTAMINE AND GAMMA-AMINOBUTYRIC ACID) IN CAT BRAIN. 121876 02-03

## GLYCINE

- THE MICROELECTROPHORETIC ADMINISTRATION OF NORADRENALINE, 5-HYDROXYTRYPTAMINE, ACETYLCHOLINE AND GLYCINE TO SACRAL PARASYMPATHETIC PREGANGLIONIC NEURONS. 132153 02-03
- SYNERGY OF ETHANOL AND PUTATIVE NEUROTRANSMITTERS: GLYCINE AND SERINE. 134043 02-03

## GLYCOGEN

- EFFECT OF MATERNALLY INJECTED SODIUM PENTOBARBITAL DURING THE EMBRYONIC PERIOD OF GESTATION ON LIVER GLYCOGEN LEVELS IN THE RAT FETUS. 122236 02-03

## GOLDFISH

- DEPRESSION OF SPONTANEOUS ACTIVITY IN GOLDFISH BY MAGNESIUM FEMOLINE. 122957 02-04

## GP-45795

- GP-45795: A CONTROLLED EVALUATION IN CHRONIC SCHIZOPHRENIC PATIENTS. 134197 02-08

## GROUP

- THE VARIABLE EFFECTS OF LSD-25 ON THE BEHAVIOR OF A HETEROGENEOUS GROUP OF CHILDHOOD SCHIZOPHRENICS. 121403 02-12
- EFFECT OF THE IMIPRAMINE GROUP OF ANTIDEPRESSANTS ON THE SEROTONIN LEVEL AND ACTIVITY OF 5-OXYTRYPTOPHANDECARBOXYLASE IN THE BRAIN OF ALBINO RATS. 125260 02-03
- QUANTITATIVE PHARMACO-ELECTROENCEPHALOGRAPHY IN THE DISCOVERY OF A NEW GROUP OF PSYCHOTROPIC DRUGS. 130472 02-07
- HYSTERICAL BLEPHAROSPASM TREATED BY PSYCHOTHERAPY AND CONDITIONING PROCEDURES IN A GROUP SETTING. 131347 02-10

## GROUPS

- DESTRUCTION OF CYTOCHROME-P-450 BY SECOBARBITAL AND OTHER BARBITURATES CONTAINING ALLYL GROUPS. 121551 02-03

## GUANETHIDINE

- CHLORPROMAZINE: ANOTHER GUANETHIDINE ANTAGONIST. 121216 02-13
- STRUCTURAL AND ULTRASTRUCTURAL CHANGES IN DEVELOPING SYMPATHETIC GANGLIA INDUCED BY GUANETHIDINE. 132645 02-03
- LACK OF TOXIC EFFECT OF GUANETHIDINE ON NERVE CELLS AND SMALL INTENSELY FLUORESCENT CELLS IN CULTURES OF SYMPATHETIC GANGLIA OF NEWBORN RATS. 132656 02-03
- INTERACTIONS OF GUANETHIDINE AND INDIRECT ACTING SYMPATHOMIMETIC AMINES. 133130 02-03
- ADRENERGIC NEURON BLOCKADE BY CLONIDINE: COMPARISON WITH GUANETHIDINE AND LOCAL ANESTHETICS. 133132 02-03
- BLOCKING H3-NOREPINEPHRINE UPTAKE AND SOME GUANETHIDINE INDUCED EFFECTS WITH TRICYCLIC PSYCHOTHERAPEUTIC DRUGS. 133182 02-03
- THE INTERACTION BETWEEN DESMETHYLIMIPRAMINE AND GUANETHIDINE ON THE RABBIT ILEUM. THE IMPORTANCE OF THE NORADRENALINE UPTAKE PROCESS IN THE REVERSAL OF GUANETHIDINE INDUCED ADRENERGIC NEURONE BLOCKADE. 133214 02-03

## GUIDELINES

- GUIDELINES FOR PSYCHOLOGISTS FOR THE USE OF DRUGS IN RESEARCH. 119546 02-17

## GUINEA-PIG

- THE ROLE OF METABOLISM IN TEMPERATURE DEPENDENT SUPERSENSITIVITY OF GUINEA-PIG ATRIA TO SYMPATHOMIMETIC AMINES. 120235 02-03
- INTRACELLULAR LOCALIZATION AND CO-FACTOR REQUIREMENT OF AMPHETAMINE TETRAZOLIUM REDUCTASE OF GUINEA-PIG BRAIN. 133763 02-03

## GULLS

- THE EFFECTS OF SOME PHENOTHIAZINE DERIVATIVES ON THE BEHAVIOR OF WILD HERRING GULLS. (LARUS A. ARGENTATUS PONTOPP). 133381 02-04

## GYNECOLOGY

- MASKED DEPRESSION IN OBSTETRICS AND GYNECOLOGY. 125864 02-09

## HABIT

- HABIT STRENGTH, DRIVE, AND DRUG EFFECTS: ROUND 2. 122953 02-04

## HABITUATION

- HABITUATION TO LIGHT AND SPONTANEOUS ACTIVITY IN THE ISOLATED SIPHON OF APLYSIA: THE EFFECTS OF SYNAPTICALLY ACTIVE PHARMACOLOGICAL AGENTS. (PH.D. DISSERTATION). 123950 02-04
- SEROTONERGIC AND CHOLINERGIC INVOLVEMENT IN HABITUATION OF ACTIVITY AND SPONTANEOUS ALTERNATION OF RATS IN A Y-MAZE. 131131 02-03

## HAIR

- PASSAGE OF 3H-CHLORPROMAZINE AND 3H-DELTA9-TETRAHYDROCANNABINOL INTO THE HAIR (FUR) OF VARIOUS MAMMALS. 123033 02-03

## HALLUCINOGEN

- ARTANE, A HALLUCINOGEN 122352 02-15

## HALLUCINOGENIC

- SOME EFFECTS OF THE HALLUCINOGENIC DRUG 2,5 DIMETHOXY-4-METHYLAMPHETAMINE ON THE METABOLISM OF BIOGENIC AMINES IN THE RAT BRAIN. 121305 02-03
- CHRONIC HALLUCINOGENIC DRUG USE AND THOUGHT DISTURBANCE. 126221 02-14
- INTERACTION OF HALLUCINOGENIC DRUGS WITH ENCEPHALITIC PROTEIN OF MYELIN. 128457 02-13
- SOME OBSERVATIONS ON THE BEHAVIOURAL EFFECTS OF HALLUCINOGENIC DRUGS ON RATS: POTENTIATION BY TWO DRUGS AFFECTING MONOAMINE METABOLISM. 133180 02-04

## HALLUCINOGENS

- THE PHARMACOLOGY OF HALLUCINOGENS. 120926 02-13
- DRUG IDENTIFICATION, PROPERTIES AND CHARACTERISTICS: NARCOTICS, STIMULANTS, DEPRESSANTS, MARIJUANA AND HALLUCINOGENS. 122148 02-03
- AN ELECTROPHYSIOLOGICAL ANALYSIS OF HALLUCINOGENS. 127519 02-13
- VASOCONSTRICTION PRODUCED BY HALLUCINOGENS ON ISOLATED HUMAN AND SHEEP UMBILICAL VASCULATURE. 132994 02-13

## HALOPERIDOL

- COMPARATIVE TRIAL OF LOW DOSE HALOPERIDOL AND FLUPHENAZINE IN OFFICE PATIENTS. 120727 02-07
- EFFECTS OF HALOPERIDOL AND CHLORPROMAZINE ON CENTRAL ADRENERGIC AND CHOLINERGIC MECHANISMS IN RABBITS. 122026 02-04
- HALOPERIDOL, CLOPENTHIXOL, AND CHLORPROMAZINE IN CHRONIC SCHIZOPHRENIA: CHEMICALLY UNRELATED ANTIPSYCHOTICS AS THERAPEUTIC ALTERNATIVES. 122209 02-08
- TREATMENT OF TARDIVE DYSKINESIA: II. SHORT-TERM EFFICACY OF DOPAMINE BLOCKING AGENTS HALOPERIDOL AND THIOPROPAZATE. 122704 02-11
- HALOPERIDOL: FIFTEEN YEARS OF CLINICAL EXPERIENCE. 127878 02-17
- CHANGES IN STAFF ANXIETY AND ATTITUDES DURING A DOUBLE-BLIND STUDY OF HALOPERIDOL IN ACUTE SCHIZOPHRENICS WITHIN A STRUCTURED MILIEU. 128349 02-08
- HALOPERIDOL IN DOPA INDUCED CHOREO-ATHETOSIS. 130018 02-11
- TREATMENT OF TOURETTES SYNDROME: WITH HALOPERIDOL, REVIEW OF 34 CASES. 131960 02-09
- NOTES ON A CASE OF TICS (GILLES-DE-LA-TOURETTES SYNDROME) TREATED BY HALOPERIDOL. 133011 02-14
- PENTOBARBITONE SLEEPING TIME AFTER HALOPERIDOL AND PROMETHAZINE. 133305 02-03
- INTERACTION BETWEEN NEUROLEPTIC THERAPY AND SOCIOTHERAPEUTIC APPROACH: AN INVESTIGATION WITH PENFLURIDOL AND HALOPERIDOL. 133355 02-08
- INHIBITION OF EXTRAPYRAMIDAL SIDE-EFFECTS OF HALOPERIDOL THROUGH THE JOINT USE OF IMIPRAMINE-TYPE DRUGS. 134326 02-15

## HANDLING

- AGE AND LACK OF HANDLING AS FACTORS IN THE CONSUMPTION OF AN ETONITAZENE SOLUTION BY NAIVE RATS. 133133 02-04

## Subject Index

- HARD-CORE**  
A CONTROLLED STUDY OF THE EFFICACY OF PENTYLENETETRAZOL (METRAZOL) WITH HARD-CORE HOSPITALIZED PSYCHOGERIATRIC PATIENTS. 127184 02-11
- HARMINE**  
HARMINE TREMOR AFTER BRAIN MONOAMINE OXIDASE INHIBITION IN THE MOUSE. 120236 02-03
- HASHISH**  
PSYCHIATRIC EFFECTS OF HASHISH. 122708 02-12
- HATCHET**  
PENICILLIN INDUCED SEIZURE ACTIVITY IN THE HATCHET FISH. 121966 02-03
- HAZARD**  
THE HAZARD OF NEUROTROPIC DRUGS IN THE FERTILE YEARS. 121578 02-15  
INHALATION INDUCED TOLERANCE AND PHYSICAL DEPENDENCE: THE HAZARD OF OPIATE SUFFUSED MARIHUANA. 127693 02-03
- HEALTHY**  
THE PHARMACOKINETICS OF LITHIUM SALTS IN ACUTE STRAIN TESTS IN HEALTHY SUBJECTS. 133356 02-13
- HEART**  
EFFECT OF L-DOPA ON ELECTROMYOGRAPH AND HEART RATE OF PARKINSONIANS. 119246 02-13  
EFFECT OF PRETREATMENT WITH SPIRONOLACTONE, PHENOBARBITAL OR BETA-DIETHYLAMINOETHYL DIPHENYLPROPYL-ACETATE (SKF-525-A) ON TRITIUM LEVELS IN BLOOD, HEART AND LIVER OF RATS AT VARIOUS TIMES AFTER ADMINISTRATION OF 3H-DIGITOXIN. 121243 02-03  
PROTECTION BY DESIPRAMINE OF 6-HYDROXYDOPAMINE INDUCED DAMAGE TO ADRENERGIC NERVE TERMINALS IN MOUSE HEART. 122229 02-03
- HEMINEVRIN**  
TREATMENT OF ACUTE ALCOHOL WITHDRAWAL WITH CHLORMETHIAZOLE (HEMINEVRIN). 123886 02-11
- HEMOLYTIC**  
THE HEMOLYTIC EFFECT OF SOME PHENOTHIAZINE DERIVATIVES IN VITRO AND IN VIVO. 133307 02-13
- HEMOPEXIN**  
STUDIES ON THE INDUCTION OF SERUM HEMOPEXIN BY PENTOBARBITAL AND POLYCYCLIC HYDROCARBONS. 133733 02-03
- HEMOPROTEIN**  
THE EFFECT OF ALTERING LIVER MICROSOMAL CO-BINDING HEMOPROTEIN COMPOSITION ON PENTOBARBITAL INDUCED ANESTHESIA. 122096 02-03
- HEMORRHAGIC**  
ALTERED NOREPINEPHRINE METABOLISM FOLLOWING EXPERIMENTAL SPINAL CORD INJURY. PART 2: PROTECTION AGAINST TRAUMATIC SPINAL CORD HEMORRHAGIC NECROSIS BY NOREPINEPHRINE SYNTHESIS BLOCKADE WITH ALPHA-METHYL-TYROSINE. 121067 02-03
- HEPATIC**  
RELATION BETWEEN DRUG METABOLIZING ACTIVITY AND PHOSPHOLIPIDS IN HEPATIC MICROSOMES. I. EFFECTS OF PHENOBARBITAL, CARBON TETRACHLORIDE, AND ACTINOMYCIN-D. 119001 02-03  
INHIBITION BY ETHYLMORPHINE AND PENTOBARBITONE IN VITRO OF THE METABOLISM OF (UREYL-14C)TOLBUTAMIDE BY HEPATIC MICROSOMAL PREPARATIONS FROM MALE AND FEMALE RATS TREATED WITH PHENOBARBITONE. 121181 02-03  
INCREASED HEPATIC PHOSPHOPROTEIN PHOSPHATASE ACTIVITY INDUCED BY PHENOBARBITAL AND ITS SUPPRESSION BY CYCLOHEXIMIDE AND SKF-525-A. 121647 02-05  
EFFECT OF COLD EXPOSURE ON DRUG ACTION AND HEPATIC DRUG METABOLISM IN THE RAT. 122247 02-03  
INHIBITION OF HEPATIC MICROSOMAL DRUG METABOLISM BY THE HYDRAZINES RO-4-4602, MK-486, AND PROCARBAZINE HYDROCHLORIDE. 132893 02-03  
ETHANOL METABOLISM IN VIVO AND THE ROLE OF HEPATIC MICROSOMAL ETHANOL OXIDATION. 133605 02-03
- HEPATITIS**  
MICROSOMAL PENTOBARBITAL HYDROXYLASE ACTIVITY IN ACUTE VIRAL HEPATITIS. 121288 02-15

## Psychopharmacology Abstracts

- HEROIN**  
HEROIN INDUCED PULMONARY EDEMA: SEQUENTIAL STUDIES OF PULMONARY FUNCTION. 118897 02-15
- HERRING**  
THE EFFECTS OF SOME PHENOTHIAZINE DERIVATIVES ON THE BEHAVIOR OF WILD HERRING GULLS. (LARUS A. ARGENTATUS PONTOPP). 133381 02-04
- HETEROGENEOUS**  
THE VARIABLE EFFECTS OF LSD-25 ON THE BEHAVIOR OF A HETEROGENEOUS GROUP OF CHILDHOOD SCHIZOPHRENICS. 121403 02-12
- HEXOBARBITAL**  
OXIDATION AND GLUCURONIDATION OF CERTAIN DRUGS IN VARIOUS SUBCELLULAR FRACTIONS OF RAT LIVER: BINDING OF DESMETHYLIMIPRAMINE AND HEXOBARBITAL TO CYTOCHROME-P-450 AND OXIDATION AND GLUCURONIDATION OF DESMETHYLIMIPRAMINE, AMINOPYRINE, P-NITROPHENOL AND 1-NAPHTHOL. 124120 02-03
- HIPPOCAMPAL**  
EFFECTS OF CHLORDIAZEPoxide UPON SPONTANEOUS ALTERNATION AND THE HIPPOCAMPAL ELECTRICAL ACTIVITY IN WHITE RATS. 120792 02-04
- HIPPOCAMPECTOMIZED**  
EFFECTS OF ATROPINE SULPHATE ON REPEATED EXTINCTION PERFORMANCE IN HIPPOCAMPECTOMIZED RATS. 123936 02-04
- HISTAMINE**  
DYNAMICS OF THE REGULATION OF HISTAMINE LEVELS IN MOUSE BRAIN. 121072 02-03
- HISTOENZYMOLGIC**  
HISTOENZYMOLGIC STUDIES OF THE BRAIN TISSUES AND INTERNAL ORGANS OF EXPERIMENTAL ANIMALS IN A SINGULAR ADMINISTRATION OF LSD-25. 133505 02-03
- HISTORY**  
HISTORY OF DEPRESSION AS A RISK FACTOR FOR DEPRESSION WITH ORAL CONTRACEPTIVES AND DISCONTINUANCE. 125962 02-14
- HOMATROPINE**  
THE EFFECTS OF CONJUNCTIVAL INSTILLATION OF ESERINE AND HOMATROPINE ON PUPILLARY REACTIVITY IN SCHIZOPHRENICS. 127520 02-13
- HOME**  
BUTISOL SODIUM VS. LIBRIUM AMONG GERIATRIC AND YOUNGER OUTPATIENTS AND NURSING HOME PATIENTS. 123885 02-10
- HOMICIDE**  
RELATIONSHIP OF LITHIUM METABOLISM TO MENTAL HOSPITAL ADMISSION AND HOMICIDE. 130473 02-17
- HOMOCARNOSINE**  
AN INVESTIGATION OF THE PHARMACOLOGICAL PROPERTIES OF HOMOCARNOSINE. 133304 02-02
- HOMOGENATES**  
INHIBITION OF DOPA DECARBOXYLATION BY RO4-4602, MK-485 AND MK-486 IN HUMAN LIVER HOMOGENATES. 122081 02-03  
METHAMPHETAMINE, FENFLURAMINE AND THEIR METABOLITES: IDENTIFICATION AND SUBCELLULAR LOCALIZATION IN RAT BRAIN HOMOGENATES. (UNPUBLISHED PAPER). 126248 02-01
- HOMOVANILLIC**  
EXCRETION OF VANILLYL-MANDELIC ACID, HOMOVANILLIC ACID, N-METHYL-NICOTINAMIDE, AND N-METHYL-2-PYRIDONE-5-CARBOXYAMIDE IN URINE OF VOLUNTARY TEST PERSONS AND PSYCHIATRIC PATIENTS BEFORE AND AFTER ADMINISTRATION OF METHIONINE. 133265 02-13
- HORIZONTAL**  
DISSOCIATION OF VERTICAL AND HORIZONTAL COMPONENTS OF ACTIVITY IN RATS TREATED WITH LITHIUM CHLORIDE. 133521 02-04
- HORMONAL**  
HORMONAL POTENTIATION OF IMIPRAMINE AND ECT IN PRIMARY DEPRESSION. 120267 02-09
- HORMONE**  
POTENTIATION OF AMITRIPTYLINE BY THYROID HORMONE. 120996 02-13  
EFFECT OF MELANOCYTE STIMULATING HORMONE ON THE CORTICAL SOMATIC EVOKED RESPONSES IN MAN. 121280 02-13  
USING HORMONE TO LIFT DEPRESSION. 133152 02-09

- HORMONES**  
PITUITARY HORMONES AND AVOIDANCE BEHAVIOR OF THE RAT. 122450 02-04
- HOSPITAL**  
THE PREVALENCE OF TARDIVE DYSKINESIAS IN MENTAL HOSPITAL PATIENTS. 120729 02-15  
THE USE OF PYRACETAM IN SUBJECTIVE SYNDROMES CAUSED BY CRANIAL TRAUMA OBSERVED IN THE PSYCHIATRIC SERVICE OF A GENERAL HOSPITAL. 121855 02-11  
MEDICAL CARE OF PSYCHOTROPIC DRUG PROBLEM PATIENTS OUTSIDE HOSPITAL. 125278 02-17  
RELATIONSHIP OF LITHIUM METABOLISM TO MENTAL HOSPITAL ADMISSION AND HOMICIDE. 130473 02-17  
COMPARATIVE STUDY OF TWO ANTIPSYCHOTIC DRUGS IN A STATE HOSPITAL. 130546 02-11
- HOSPITALIZATION**  
CHLORPROMAZINE IN CHRONIC SCHIZOPHRENIA: THE EFFECT OF AGE AND HOSPITALIZATION ON BEHAVIORAL DOSE-RESPONSE RELATIONSHIPS. 126227 02-08  
PREDICTION OF PSYCHIATRIC HOSPITALIZATION: II. THE HOSPITALIZATION PRONENESS SCALE: A CROSS VALIDATION. 134204 02-08
- HOSPITALIZED**  
EFFECTS OF PROLONGED PHENOTHIAZINE INTAKE ON PSYCHOTIC AND OTHER HOSPITALIZED CHILDREN. 119969 02-15  
CLINICAL EFFECTS OF MEPIPAZOL ON HOSPITALIZED CHRONIC SCHIZOPHRENICS. 122199 02-07  
A CONTROLLED STUDY OF THE EFFICACY OF PENTYLENETETRAZOL (METRAZOL) WITH HARD-CORE HOSPITALIZED PSYCHOGERIATRIC PATIENTS. 127184 02-11  
NICOTINIC ACID, THIORIDAZINE, FLUOXYMESTERONE AND THEIR COMBINATIONS IN HOSPITALIZED GERIATRIC PATIENTS: A SYSTEMATIC CLINICAL STUDY. 130668 02-11
- HOUSING**  
INTERACTION OF HOUSING CONDITIONS AND CYCLOHEXIMIDE ON MEMORY FORMATION. 131448 02-04
- HUMAN**  
STEADY-STATE LEVELS OF PROBENECID AND THEIR RELATION TO ACID MONOAMINE METABOLITES IN HUMAN CEREBROSPINAL FLUID. 119985 02-03  
HUMAN BRAIN MONOAMINE OXIDASE: MULTIPLE FORMS AND SELECTIVE INHIBITORS. 120939 02-13  
INHIBITION OF DOPA DECARBOXYLATION BY RO-4-4602, MK-485 AND MK-486 IN HUMAN LIVER HOMOGENATES. 122081 02-03  
METABOLISM OF 3,4 DIHYDROXYPHENYLALANINE (L-DOPA) IN HUMAN SUBJECTS. 122166 02-13  
HUMAN CHROMOSOMES AND OPIATES. 126231 02-15  
VASOCONSTRICTION PRODUCED BY HALLUCINOGENS ON ISOLATED HUMAN AND SHEEP UMBILICAL VASCULATURE. 132994 02-13
- HUMANS**  
ALCOHOL AND MARIHUANA: A COMPARISON OF EFFECTS ON A TEMPORALLY CONTROLLED OPERANT IN HUMANS. 122178 02-14  
RUBIDIUM: BIOCHEMICAL, BEHAVIORAL, AND METABOLIC STUDIES IN HUMANS. 134111 02-09  
EFFECTS OF TWO ANTIDEPRESSANTS UPON CONCEPT LEARNING: PSYCHOPHYSIOLOGICAL PARAMETERS IN DEPRESSED HUMANS. 134850 02-08
- HUNTINGTONS**  
BIOCHEMICAL AND PHARMACOLOGIC STUDIES OF HUNTINGTONS CHOREA. (UNPUBLISHED PAPER). 125367 02-11
- HYDRAZINES**  
INHIBITION OF HEPATIC MICROSOMAL DRUG METABOLISM BY THE HYDRAZINES RO-4-4602, MK-486, AND PROCARBAZINE HYDROCHLORIDE. 132893 02-03
- HYDROCARBONS**  
STUDIES ON THE INDUCTION OF SERUM HEMOPEXIN BY PENTOBARBITAL AND POLYCYCLIC HYDROCARBONS. 133733 02-03
- HYDROCHLORHYDRATE**  
USE OF HYDROCHLORHYDRATE OF AMANTADINE IN PARKINSONS SYNDROME. 132986 02-11
- HYDROCHLORIDES**  
PHARMACOLOGICAL STUDY OF HYDROGENATED RUGULOVASINE A AND B HYDROCHLORIDES: CENTRAL AND PERIPHERAL ACTIONS. 130912 02-03
- HYDROGENATED**  
PHARMACOLOGICAL STUDY OF HYDROGENATED RUGULOVASINE A AND B HYDROCHLORIDES: CENTRAL AND PERIPHERAL ACTIONS. 130912 02-03
- HYDROXYLASE**  
EFFECT OF MORPHINE ON TYROSINE HYDROXYLASE ACTIVITY IN MOUSE BRAIN. 119033 02-03  
MICROSOMAL PENTOBARBITAL HYDROXYLASE ACTIVITY IN ACUTE VIRAL HEPATITIS. 121288 02-15  
P-CHLOROAMPHETAMINE - INHIBITION OF CEREBRAL TRYPTOPHAN HYDROXYLASE. 121354 02-03  
ENHANCED ACTIVITY OF BENZPYRENE HYDROXYLASE IN RAT LIVER AND LUNG AFTER ACUTE CANNABIS ADMINISTRATION. 122244 02-03  
CHANGES IN TYROSINE HYDROXYLASE AND DOPA DECARBOXYLASE INDUCED BY PHARMACOLOGICAL AGENTS. 132706 02-03  
THE EFFECTS OF ENVIRONMENTAL ISOLATION ON BEHAVIOR AND REGIONAL RAT BRAIN TYROSINE HYDROXYLASE AND TRYPTOPHAN HYDROXYLASE ACTIVITIES. 133715 02-03
- HYDROXYLATION**  
TYROSINE HYDROXYLATION IN THE RAT STRIATUM IN VITRO AND IN VIVO AFTER NIGRAL LESION AND CHLORPROMAZINE TREATMENT. 132683 02-03
- HYDROXYZINE**  
EFFECTS OF DEXTROAMPHETAMINE, CHLORPROMAZINE, AND HYDROXYZINE ON BEHAVIOR AND PERFORMANCE IN HYPERACTIVE CHILDREN. 129494 02-11
- HYPERACTIVE**  
THE EFFECT OF METHYLPHENIDATE (RITALIN) ON SUSTAINED ATTENTION IN HYPERACTIVE CHILDREN. 122198 02-11  
EFFECTS OF DEXTROAMPHETAMINE, CHLORPROMAZINE, AND HYDROXYZINE ON BEHAVIOR AND PERFORMANCE IN HYPERACTIVE CHILDREN. 129494 02-11  
LITHIUM AND CHLORPROMAZINE: A CONTROLLED Crossover STUDY OF HYPERACTIVE SEVERELY DISTURBED YOUNG CHILDREN. 131003 02-11
- HYPERACTIVITY**  
INTRAHYPOTHALAMIC AND INTRASTRIATAL DOPAMINE AND NOREPINEPHRINE INJECTIONS IN RELATION TO MOTOR HYPERACTIVITY IN RATS. 120019 02-04
- HYPERKINESIA**  
BLOCKADE BY PIMOZIDE OF (L) AMPHETAMINE INDUCED HYPERKINESIA IN MICE. 121316 02-04
- HYPERKINESIAS**  
ATHETOID AND CHOREIFORM HYPERKINESIAS PRODUCED BY CAUDATE APPLICATION OF DOPAMINE IN CATS. 122195 02-04
- HYPERKINETIC**  
HYPERKINETIC ADULT: STUDY OF THE PARADOXICAL AMPHETAMINE RESPONSE. 128875 02-11  
LEVOAMPHETAMINE AND DEXTROAMPHETAMINE: COMPARATIVE EFFICACY IN THE HYPERKINETIC SYNDROME: ASSESSMENT BY TARGET SYMPTOMS. 129834 02-14  
PASPERTIN (METOCLOPRAMIDE) AS A CAUSE OF DYSTONIC HYPERKINETIC SYNDROME IN CHILDREN. 132901 02-15
- HYPERSENSITIVITY**  
IN VITRO METHODS OF DETECTING DRUG HYPERSENSITIVITY. 132995 02-15
- HYPERTENSIVE**  
HYPERTENSIVE EPISODES AFTER ADDING METHYLPHENIDATE (RITALIN) TO TRICYCLIC ANTIDEPRESSANTS: (REPORT OF THREE CASES AND REVIEW OF CLINICAL ADVANTAGES. 131348 02-15
- HYPERTHERMIA**  
HYPERTHERMIA IN D-AMPHETAMINE TOXICITY IN AGGREGATED MICE OF DIFFERENT STRAINS. 120364 02-03



- INTERACTION OF FENFLURAMINE WITH D-AMPHETAMINE INDUCED  
EXCITATORY BEHAVIOUR AND HYPERTHERMIA. 122443 02-03
- HYPNOSIS**  
METHOHEXITAL HYPNOSIS IN ELECTROENCEPHALOGRAPHY. 127876 02-13  
VARIOUS PROBLEMS IN APPLICATION OF HYPNOSIS; HYPNOSIS BY  
NARCOTICS. 130575 02-17
- HYPNOTIC**  
RELATIVE POTENCY OF TRICHLOROFOS COMPARED TO PENTOBARBITAL  
AS A HYPNOTIC. 121985 02-07  
A COMPARATIVE EVALUATION OF TWO HYPNOTIC AGENTS IN GENERAL  
PRACTICE PATIENTS WITH INSOMNIA. 122430 02-07  
A CLINICAL EVALUATION OF THE HYPNOTIC EFFICACY AND SAFETY OF  
MEBUTAMATE. 128341 02-11  
A DOUBLE-BLIND CONTROLLED TRIAL OF PSYCHOTROPIC DRUG  
OXAZOLAM ON NEUROTICS, WITH SPECIAL REFERENCE TO ITS  
HYPNOTIC EFFECT. 130068 02-10  
FLURAZEPAM: STUDY OF ITS HYPNOTIC PROPERTIES IN NORMAL  
SUBJECTS. 133221 02-07
- HYPNOTICS**  
THE CLINICAL CHOICE OF SEDATIVE HYPNOTICS. 118899 02-15  
ELECTROENCEPHALOGRAPH AND BEHAVIOR OF RABBITS IN  
PHYSIOLOGICAL AND DRUG INDUCED SLEEP, PART III: INFLUENCE OF  
HYPNOTICS ON SLEEP BEHAVIOR OF RABBITS; DISCUSSION AND  
SUMMARY. 133672 02-03
- HYPOMANIA**  
L-DOPA, DOPAMINE, AND HYPOMANIA. 134119 02-15
- HYPOPHYSCTOMY**  
THE INFLUENCE OF ADRENALECTOMY, HYPOPHYSCTOMY,  
THYROIDECTOMY, CASTRATION, AND TESTOSTERONE ON  
APOMORPHINE INDUCED AGGRESSIVE BEHAVIOUR IN THE RAT. 120790 02-04
- HYPOTENSION**  
IDIOPATHIC ORTHOSTATIC HYPOTENSION TREATED WITH LEVODOPA  
AND MAO INHIBITOR: A PRELIMINARY REPORT. 122102 02-13  
A TYPICAL MANIFESTATIONS OF POSTURAL HYPOTENSION. 122728 02-15
- HYPOTENSIVE**  
THE CENTRAL HYPOTENSIVE ACTION OF AMPHETAMINE, EPHEDRINE,  
PHENTERMINE, CHLORPHENTERMINE AND FENFLURAMINE. 122446 02-03
- HYPOTHALAMIC**  
MORPHINE ENHANCES LATERAL HYPOTHALAMIC SELF-STIMULATION IN  
THE RAT. 121882 02-04  
EFFECTS OF MORPHINE AND ANTAGONISTS ON HYPOTHALAMIC CELL  
ACTIVITY. 133309 02-03
- HYPOTHERMIA**  
HYPOTHERMIA ASSOCIATED WITH METHADONE INTOXICATION. 121839 02-15  
APOMORPHINE INDUCED HYPOTHERMIA IN MICE; A POSSIBLE  
DOPAMINERGIC EFFECT. 133213 02-03  
RELATIONSHIP BETWEEN HYPOTHERMIA AND SOME CHLORPROMAZINE  
INDUCED METABOLIC CHANGES IN MOUSE BRAIN. 133526 02-03
- HYPOTHERMIC**  
RELEASE OF BRAIN DOPAMINE AS THE PROBABLE MECHANISM FOR THE  
HYPOTHERMIC EFFECT OF D-AMPHETAMINE. 128353 02-03  
XYLAMIDINE TOSYLATE: DIFFERENTIAL ANTAGONISM OF THE  
HYPOTHERMIC EFFECTS OF N,N DIMETHYLTRYPTAMINE, BUFOTENINE,  
AND 5-METHOXYTRYPTAMINE. 133528 02-03
- HYPOTHESIS**  
THE EFFECT OF SCOPOLAMINE ON THE KAMIN EFFECT; A TEST OF THE  
PARASYMPATHETIC OVERREACTION HYPOTHESIS. 127023 02-04
- HYPOTHETICAL**  
HYPOTHETICAL ROLE OF DEAMINATED METABOLITES OF  
NORADRENALINE IN PGO SPIKING AND PS. 119392 02-03  
DECISIONS ABOUT DRUG THERAPY II: EXPERT OPINION IN A  
HYPOTHETICAL SITUATION. 126990 02-17
- HYPOTHYROIDISM**  
SEVERE HYPOTHYROIDISM - AN EARLY COMPLICATION OF LITHIUM  
THERAPY. 121979 02-15
- HYSTERICAL**  
HYSTERICAL BLEPHAROSPASM TREATED BY PSYCHOTHERAPY AND  
CONDITIONING PROCEDURES IN A GROUP SETTING. 131347 02-10
- H3-NOREPINEPHRINE**  
BLOCKING H3-NOREPINEPHRINE UPTAKE AND SOME GUANETHIDINE  
INDUCED EFFECTS WITH TRICYCLIC PSYCHOTHERAPEUTIC DRUGS. 133182 02-03
- IDENTIFICATION**  
IDENTIFICATION OF DRUGS TAKEN IN OVERDOSE CASES. 119022 02-06  
IDENTIFICATION AND TREATMENT OF ACUTE PSYCHOTIC STATES  
SECONDARY TO THE USAGE OF OVER-THE-COUNTER SLEEPING  
PREPARATIONS. 120269 02-15  
DRUG IDENTIFICATION, PROPERTIES AND CHARACTERISTICS:  
NARCOTICS, STIMULANTS, DEPRESSANTS, MARIJUANA AND  
HALLUCINOGENS. 122148 02-03  
PROBLEMS IN IDENTIFICATION OF METHYLENEDIOXY AND METHOXY  
AMPHETAMINES. 125748 02-01  
METHAMPHETAMINE, FENFLURAMINE AND THEIR METABOLITES:  
IDENTIFICATION AND SUBCELLULAR LOCALIZATION IN RAT BRAIN  
HOMOGENATES. (UNPUBLISHED PAPER). 126248 02-01  
PEYOTE ALKALOIDS: IDENTIFICATION IN THE MEXICAN CACTUS  
PELECYPHORA ASELLIFORMIS EHRENBERG. 132873 02-01
- IDIOPATHIC**  
IDIOPATHIC ORTHOSTATIC HYPOTENSION TREATED WITH LEVODOPA  
AND MAO INHIBITOR: A PRELIMINARY REPORT. 122102 02-13
- ILEUM**  
THE INTERACTION BETWEEN DESMETHYLIMIPRAMINE AND  
GUANETHIDINE ON THE RABBIT ILEUM. THE IMPORTANCE OF THE  
NORADRENALINE UPTAKE PROCESS IN THE REVERSAL OF  
GUANETHIDINE INDUCED ADRENERGIC NEURONE BLOCKADE. 133214 02-03
- ILLNESS**  
CONTROL OF BEHAVIORAL SYMPTOMS IN PATIENTS WITH LONG-TERM  
ILLNESS. 120730 02-14  
CATECHOLAMINE METABOLISM, DEPRESSIVE ILLNESS AND DRUG  
RESPONSE. 120992 02-13  
THE SWITCH PROCESS IN MANIC-DEPRESSIVE ILLNESS. II. RELATIONSHIP  
TO CATECHOLAMINES, REM SLEEP, AND DRUGS. 122980 02-09  
COMMENTS ON TREATMENT: LITHIUM CARBONATE IN MANIC-  
DEPRESSIVE ILLNESS. 123351 02-09  
BIOCHEMICAL AND PHARMACOLOGICAL VARIATIONS IN MANIC-  
DEPRESSIVE ILLNESS. 126500 02-09  
PSYCHOBIOLOGICAL AND PHARMACOLOGICAL STUDIES OF MANIC-  
DEPRESSIVE ILLNESS. 127217 02-09  
THE SYNACTHEN TEST IN DEPRESSIVE ILLNESS. 132870 02-13
- ILLNESSES**  
ALCOHOL RELATED ILLNESSES - PART III. 133559 02-13
- IMINODIBENZYL**  
LUMB DEFORMITIES ASSOCIATED WITH IMINODIBENZYL  
HYDROCHLORIDE. 122094 02-15
- IMIPRAMINE**  
THE ACTION OF IMIPRAMINE, AMITRIPTYLINE, DOXEPIN AND  
BUTRIPTYLINE IN AN OPERANT CONDITIONING SCHEDULE. 120014 02-04  
L-DOPA AND IMIPRAMINE: BIOCHEMICAL AND BEHAVIORAL  
INTERACTION. 120228 02-03  
HORMONAL POTENTIATION OF IMIPRAMINE AND ECT IN PRIMARY  
DEPRESSION. 120267 02-09  
THE EFFECTS OF CHRONIC IMIPRAMINE ADMINISTRATION ON RAT BRAIN  
LEVELS OF SEROTONIN, 5-HYDROXYINDOLEACETIC ACID,  
NOREPINEPHRINE AND DOPAMINE. 120359 02-03

- THE COMPARATIVE ANTIDEPRESSANT VALUE OF L-TRYPTOPHAN AND IMIPRAMINE WITH AND WITHOUT ATTEMPTED POTENTIATION BY LIOETHYRONINE. 120995 02-09
- EFFECTS OF IMIPRAMINE AND DEXTROAMPHETAMINE ON BEHAVIOR OF NEUROPSYCHIATRICALY IMPAIRED CHILDREN. 121449 02-14
- COMPARATIVE STUDY ON THE INHIBITION OF NA<sub>2</sub>K<sub>2</sub> ACTIVATED ATPASE ACTIVITY BY CHLORPROMAZINE, PROMAZINE, IMIPRAMINE, AND THEIR MONODESMETHYL METABOLITES. 122091 02-03
- EFFECTS OF CHLORPROMAZINE, TRIFLUOPERAZINE, PROMAZINE AND IMIPRAMINE ON THE PROPERTIES OF EXCITABLE MEMBRANES. 125258 02-03
- EFFECT OF THE IMIPRAMINE GROUP OF ANTIDEPRESSANTS ON THE SEROTONIN LEVEL AND ACTIVITY OF 5-OXYTRYPTOPHANDECARBOXYLASE IN THE BRAIN OF ALBINO RATS. 125260 02-03
- THYROID IMIPRAMINE CLINICAL AND CHEMICAL INTERACTION: EVIDENCE FOR A RECEPTOR DEFICIT IN DEPRESSION. 127216 02-09
- ESTROGEN - IMIPRAMINE INTERACTION. 128878 02-15
- PERAZINE AND IMIPRAMINE CONTENT IN THE TISSUES OF RATS OF DIFFERENT AGES. 133352 02-03
- IMIPRAMINE-TYPE**  
INHIBITION OF EXTRAPYRAMIDAL SIDE-EFFECTS OF HALOPERIDOL THROUGH THE JOINT USE OF IMIPRAMINE-TYPE DRUGS. 134326 02-15
- IMISINE**  
EFFECT OF AMINAZINE AND IMISINE ON METABOLISM OF DICARBOXYLIC AMINO ACIDS AND THEIR DERIVATIVES (GLUTAMINE AND GAMMA-AMINOBUTYRIC ACID) IN CAT BRAIN. 121876 02-03
- IMMUNE**  
FATAL IMMUNE THROMBOCYTOPENIA INDUCED BY ETHCHLORVYNOL. 118898 02-15
- IMMUNOSYPHATECTOMY**  
THE EFFECT OF IMMUNOSYPHATECTOMY ON THE RESPONSES OF THE MOUSE TO RESERPINE AND VARIOUS ANTIDEPRESSANT AND STIMULANT DRUGS. 120011 02-03
- IMPACT**  
BIOGENIC AMINES AND THEIR IMPACT IN PSYCHIATRY. 126935 02-03
- THE IMPACT OF SCIENTIFIC MODELS ON CLINICAL PSYCHOPHARMACOLOGY: A PSYCHIATRISTS VIEW. 126937 02-17
- THE IMPACT OF SCIENTIFIC MODELS ON CLINICAL PSYCHOPHARMACOLOGY: A PSYCHIATRISTS VIEW. 126938 02-17
- THE IMPACT OF SCIENTIFIC MODELS ON CLINICAL PSYCHOPHARMACOLOGY: AN INTERNISTS VIEW. 126939 02-17
- THE IMPACT OF SCIENTIFIC MODELS ON CLINICAL PSYCHOPHARMACOLOGY: A PHARMACOLOGISTS VIEW. 126940 02-17
- IMPAIRED**  
EFFECTS OF IMIPRAMINE AND DEXTROAMPHETAMINE ON BEHAVIOR OF NEUROPSYCHIATRICALY IMPAIRED CHILDREN. 121449 02-14
- IMPAIRMENT**  
EFFECT OF SALICYLATE ON AUDITORY DETECTION THRESHOLDS MEASURED BY CONDITIONED AVOIDANCE RESPONSES: SENSORY IMPAIRMENT OR MOTIVATION DECREMENT 132543 02-03
- LOW DOSAGE PHENOTHIAZINE THERAPY: EFFECTIVE ANXIOLYTIC ACTION WITHOUT IMPAIRMENT TO INTELLECTUAL FUNCTION. 132715 02-10
- IMPOTENCIES**  
CLINICAL STUDY OF ARGININE ASPARTATE IN SECONDARY SEXUAL IMPOTENCIES. 132753 02-11
- IMPRINTING**  
EVIDENCE FOR A CONSOLIDATION PROCESS FOLLOWING IMPRINTING IN THE ONE-DAY-OLD CHICK. 132159 02-04
- IMPROVEMENT**  
PART 2. IMPROVEMENT CRITERIA IN DRUG TRIALS WITH NEUROTIC PATIENTS. 121406 02-10
- INAPPROPRIATE**  
INAPPROPRIATE RESPONSE OF DRUG ADDICTS TO CARDIOTHORACIC SURGERY. 119039 02-15
- INBRED**  
EFFECTS OF INTRAHIPPOCAMPAL INJECTIONS WITH METHYLSCOPOLAMINE AND NEOSTIGMINE UPON EXPLORATORY BEHAVIOUR IN TWO INBRED MOUSE STRAINS. 120789 02-04
- INCIDENCE**  
RESERPINE INDUCED ALTERATIONS IN BRAIN AMINES AND THEIR RELATIONSHIP TO CHANGES IN THE INCIDENCE OF MINIMAL ELECTROSHOCK SEIZURES IN MICE. 120360 02-03
- INCISIVE**  
OPIRAN, ANXIETY AND PSYCHOSIS: CLINICAL TESTING OF A NEW INCISIVE NEUROLEPTIC. 132766 02-07
- INCORPORATION**  
MORPHINE INDUCED INCREASES IN THE INCORPORATION OF 14C-TYROSINE INTO 14C-DOPAMINE AND 14C-NOREPINEPHRINE IN THE MOUSE BRAIN: ANTAGONISM BY NALOXONE AND TOLERANCE. 120358 02-03
- INCREASE**  
SELECTIVE INCREASE IN AVOIDANCE RESPONDING BY METHAMPHETAMINE IN NAIVE RATS. 120786 02-04
- PHENOBARBITAL MEDIATED INCREASE IN RING AND N-HYDROXYLATION OF THE CARCINOGEN N-2-FLUORENYLACETAMIDE, AND DECREASE IN AMOUNTS BOUND TO LIVER DEOXYRIBONUCLEIC ACID. 121265 02-03
- INCREASES**  
MORPHINE INDUCED INCREASES IN THE INCORPORATION OF 14C-TYROSINE INTO 14C-DOPAMINE AND 14C-NOREPINEPHRINE IN THE MOUSE BRAIN: ANTAGONISM BY NALOXONE AND TOLERANCE. 120358 02-03
- LOCOMOTOR ACTIVITY INCREASES PRODUCED BY INTRAHIPPOCAMPAL AND INTRASEPTAL ATROPINE IN RATS. 122391 02-04
- TEMPERATURE INCREASES AND BLOOD PROTEIN CHANGES WITH NEUROLEPTICS: WITH SPECIAL CONSIDERATION OF THE NEW DIBENZODIAZEPINE DERIVATIVE, CLOZAPINE. 133350 02-15
- INCREASING**  
THE DOSE-RESPONSE EFFECT OF AMPHETAMINE UPON AVOIDANCE BEHAVIOR IN THE RAT SEEN AS A FUNCTION OF INCREASING STEREOTYPY. 123935 02-04
- INDEPENDENT**  
THE EFFECTS OF CHOLINERGIC AGENTS UPON BEHAVIOR CONTROLLED BY AN AVOIDANCE SCHEDULE THAT EMPLOYS SIGNAL RESPONSE INDEPENDENT SHOCK. 131449 02-04
- INDICATOR**  
SOMATOSENSORY EVOKED POTENTIAL: AN OBJECTIVE INDICATOR OF THE THERAPY EFFICACY OF A NEW PSYCHOTROPIC DRUG, CLORAZEPATE DIPOTASSIUM (TRANXENE). 132953 02-07
- INDIRECT**  
INTERACTIONS OF GUANETHIDINE AND INDIRECT ACTING SYMPATHOMIMETIC AMINES. 133130 02-03
- INDIVIDUAL**  
INTERACTION C : THE EFFECT OF LYSERGIC ACID DIETHYLAMIDE AND AMINAZINE AT THE LEVEL OF INDIVIDUAL NEURONS OF THE MIDBRAIN RETICULAR FORMATION. 134457 02-03
- INDIVIDUALS**  
TREATMENT OF PSYCHIC DISTURBANCES IN AGING INDIVIDUALS. 133642 02-11
- INDOKLON**  
CLINICAL RESULTS: INDOKLON VERSUS ECT. 129382 02-12
- INDOLE**  
INDOLE METABOLISM AND BEHAVIOR IN DOG. 118931 02-04
- PHARMACOLOGICAL STUDIES OF NEW INDOLE ALKALOIDS, RUGULOVASINE A AND B HYDROCHLORIDE. I.EFFECTS OF BOTH ALKALOIDS ON CARDIOVASCULAR AND CENTRAL NERVOUS SYSTEM, AND SMOOTH MUSCLES. 133217 02-02
- INDOLEAMINE**  
CHEMICALLY INDUCED DEGENERATION OF INDOLEAMINE - CONTAINING NERVE TERMINALS IN RAT BRAIN. 120813 02-03
- INDOLES**  
INHIBITION OF CATECHOLAMINE OXIDATION BY INDOLES. 121357 02-03
- INDUCED**  
HEROIN INDUCED PULMONARY EDEMA: SEQUENTIAL STUDIES OF PULMONARY FUNCTION. 118897 02-15

## Subject Index

- FATAL IMMUNE THROMBOCYTOPENIA INDUCED BY ETHCHLORVYNOL. 118898 02-15
- STUDIES ON THE MECHANISM OF AMPHETAMINE INDUCED LIPOLYSIS IN THE RAT. 119031 02-03
- EFFECTS OF PROPRANOLOL ON MARIJUANA INDUCED COGNITIVE DYSFUNCTIONING. 119034 02-14
- CENTRAL NERVOUS SYSTEM MECHANISMS RESPONSIBLE FOR BLOOD PRESSURE ELEVATION INDUCED BY P-CHLOROPHENYLALANINE. 119161 02-03
- THE EFFECTS OF LOW-DOSE COMBINATIONS OF D-AMPHETAMINE AND COCAINE ON EXPERIMENTALLY INDUCED CONFLICT IN THE RAT. 119173 02-04
- INCREASED CALCIUM AND MAGNESIUM EXCRETION INDUCED BY LITHIUM CARBONATE. 119983 02-03
- METHYLPHENIDATE INDUCED INHIBITION OF EXPLORATORY BEHAVIOR IN RATS. 120219 02-04
- CHLOROQUINE INDUCED DEPRESSION OF NEUROMUSCULAR TRANSMISSION. 120233 02-03
- PHYSOSTIGMINE AND 1,1 DIMETHYL-4-PHENYLPIPERAZINIUM INDUCED PRESSOR RESPONSES AND CATECHOLAMINE RELEASE IN 6-HYDROXYDOPAMINE TREATED RATS. 120234 02-03
- MORPHINE INDUCED INCREASES IN THE INCORPORATION OF 14C-TYROSINE INTO 14C-DOPAMINE AND 14C-NOREPINEPHRINE IN THE MOUSE BRAIN: ANTAGONISM BY NALOXONE AND TOLERANCE. 120358 02-03
- RESERPINE INDUCED ALTERATIONS IN BRAIN AMINES AND THEIR RELATIONSHIP TO CHANGES IN THE INCIDENCE OF MINIMAL ELECTROSHOCK SEIZURES IN MICE. 120360 02-03
- THE INFLUENCE OF ADRENALECTOMY, HYPOPHYSECTOMY, THYROIDECTOMY, CASTRATION, AND TESTOSTERONE ON APOMORPHINE INDUCED AGGRESSIVE BEHAVIOUR IN THE RAT. 120790 02-04
- SPECIFIC ANTAGONISM BY DOPAMINE INHIBITORS OF ITEMS OF AMPHETAMINE INDUCED AGGRESSIVE BEHAVIOUR. 120791 02-04
- CHEMICALLY INDUCED DEGENERATION OF INDOLEAMINE - CONTAINING NERVE TERMINALS IN RAT BRAIN. 120813 02-03
- METHADONE INDUCED PULMONARY EDEMA. 121218 02-15
- BLOCKADE BY PIMOZIDE OF (.) AMPHETAMINE INDUCED HYPERKINESIA IN MICE. 121316 02-04
- TRANQUILLIZER INDUCED GALACTORRHEA. 121621 02-15
- INCREASED HEPATIC PHOSPHOPROTEIN PHOSPHATASE ACTIVITY INDUCED BY PHENOBARBITAL AND ITS SUPPRESSION BY CYCLOHEXIMIDE AND SKF-525-A. 121647 02-05
- EFFECT OF CARBARYL (1-NAPHTHYL-N-METHYLCARBAMATE) ON PENTOBARBITAL INDUCED SLEEPING TIME AND SOME LIVER MICROSOmal ENZYMES IN WHITE LEGHORN COCKERELS. 121836 02-03
- THE INFLUENCE OF SEMICARBAZIDE INDUCED DEPLETION OF GAMMA-AMINOBUTYRIC ACID ON PRESYNAPTIC INHIBITION. 121963 02-03
- PENICILLIN INDUCED SEIZURE ACTIVITY IN THE HATCHET FISH. 121966 02-03
- EFFECTS OF BARBITAL ON DEPRIVATION INDUCED WATER CONSUMPTION BY RATS. 122033 02-04
- THE EFFECT OF ALTERING LIVER MICROSOmal CO-BINDING HEMOPROTEIN COMPOSITION ON PENTOBARBITAL INDUCED ANESTHESIA. 122096 02-03
- CARBON MONOXIDE INDUCED PARKINSONISM. 122172 02-11
- SUPPRESSION BY CLONIDINE (ST-155) OF CARDIAC ARRHYTHMIAS INDUCED BY DIGITALIS. 122181 02-03
- PROTECTION BY DESIPRAMINE OF 6-HYDROXYDOPAMINE INDUCED DAMAGE TO ADRENERGIC NERVE TERMINALS IN MOUSE HEART. 122229 02-03
- CLONIDINE INDUCED INTRAHYPOTHALAMIC STIMULATION OF EATING IN RATS. 122395 02-04
- INTERACTION OF FENFLURAMINE WITH D-AMPHETAMINE INDUCED EXCITATORY BEHAVIOUR AND HYPERTHERMIA. 122443 02-03
- THE INDUCTION AND ANTAGONISM OF CENTRAL NERVOUS SYSTEM STIMULANT - INDUCED STEREOTYPED BEHAVIOR IN THE CAT. 122569 02-04

## Psychopharmacology Abstracts

- THE ACTION OF SOME ANTICONVULSANT DRUGS ON COBALT INDUCED EPILEPSY AND ON THE BEMEGRIDE THRESHOLD IN ALERT CATS. 123631 02-03
- BETA-ADRENERGIC BLOCKING AGENTS AND AMPHETAMINE OR APOMORPHINE INDUCED STEREOTYPED BEHAVIOR IN RATS. 123937 02-04
- THE EFFECTS OF ELECTROSHOCK THERAPY, LITHIUM AND TRICYCLIC ANTIDEPRESSANT TREATMENT ON PROBENECID INDUCED ACCUMULATIONS OF CSF AMINE METABOLITES IN DEPRESSED PATIENTS. (UNPUBLISHED PAPER). 125200 02-09
- EFFECTS OF TRIMEXYPHENIDYL ON SCHEDULE INDUCED ALCOHOL DRINKING BY RATS. 125531 02-03
- ACUTE PSYCHOSIS INDUCED BY PSYCHOTOMIMETIC DRUG ABUSE: CLINICAL FINDINGS. 126219 02-12
- ACUTE PSYCHOSIS INDUCED BY PSYCHOTOMIMETIC DRUG ABUSE: NEUROCHEMICAL FINDINGS. 126220 02-13
- IMPLICATIONS OF AMPHETAMINE INDUCED STEREOTYPED BEHAVIOR AS A MODEL FOR TARDIVE DYSKINESIAS. 126230 02-13
- INHALATION INDUCED TOLERANCE AND PHYSICAL DEPENDENCE: THE HAZARD OF OPIATE SUFFUSED MARIJUANA. 127693 02-03
- THE TREATMENT OF PHENOTHIAZINE INDUCED TACHYCARDIA BY PROPRANOLOL. 128463 02-13
- GASTRIC LESIONS INDUCED BY RESTRAINT AND COLD EXPOSURE: ARE CENTRAL ADRENERGIC MECHANISMS INVOLVED. (UNPUBLISHED PAPER). 129461 02-03
- HALOPERIDOL IN DOPA INDUCED CHOREO-ATHETOSIS. 130018 02-11
- CHLORPROMAZINE INDUCED ALTERATIONS OF CARBOHYDRATE METABOLISM: EFFECT OF CHLORPROMAZINE PRETREATMENT ON THE INSULIN RESPONSE TO GLUCOSE AND TOLBUTAMIDE IN THE ADRENALECTOMIZED RAT. (PH.D. DISSERTATION). 130182 02-03
- RHYTHMIC ACTIVITY OF THE VESTIBULO-OCULOMOTOR SYSTEM INDUCED BY A CHOLINERGIC DRUG. 132164 02-03
- GASTRIC LESIONS INDUCED BY RESTRAINT AND COLD EXPOSURE: A STUDY OF CENTRAL MONOAMINERGIC MECHANISM. (UNPUBLISHED PAPER). 132367 02-03
- STRUCTURAL AND ULTRASTRUCTURAL CHANGES IN DEVELOPING SYMPATHETIC GANGLIA INDUCED BY GUANETHIDINE. 132645 02-03
- SHOCK INDUCED AGGRESSION: EFFECTS OF 6-HYDROXYDOPAMINE AND OTHER PHARMACOLOGICAL AGENTS. 132680 02-04
- CHANGES IN TYROSINE HYDROXYLASE AND DOPA DECARBOXYLASE INDUCED BY PHARMACOLOGICAL AGENTS. 132706 02-03
- ELECTROENCEPHALOGRAPH AND BEHAVIOR OF RABBITS IN PHYSIOLOGICAL AND DRUG-INDUCED SLEEP; PART II: EEG OF THE RABBIT IN DRUG INDUCED SLEEP. 132829 02-04
- BLOCKING H3-NOREPINEPHRINE UPTAKE AND SOME GUANETHIDINE INDUCED EFFECTS WITH TRICYCLIC PSYCHOTHERAPEUTIC DRUGS. 133182 02-03
- APOMORPHINE INDUCED HYPOTHERMIA IN MICE; A POSSIBLE DOPAMINERGIC EFFECT. 133213 02-03
- THE INTERACTION BETWEEN DESMETHYLIMIPRAMINE AND GUANETHIDINE ON THE RABBIT ILEUM. THE IMPORTANCE OF THE NORADRENALINE UPTAKE PROCESS IN THE REVERSAL OF GUANETHIDINE INDUCED ADRENERGIC NEURONE BLOCKADE. 133214 02-03
- AGGRESSIVE BEHAVIOUR INDUCED BY MARIJUANA COMPOUNDS AND AMPHETAMINE IN RATS PREVIOUSLY MADE DEPENDENT ON MORPHINE. 133522 02-04
- RELATIONSHIP BETWEEN HYPOTHERMIA AND SOME CHLORPROMAZINE INDUCED METABOLIC CHANGES IN MOUSE BRAIN. 133526 02-03
- EFFECT OF BOL ON THE LSD INDUCED ALTERATION OF FLICKER DISCRIMINATION. 133655 02-04
- ELECTROENCEPHALOGRAPH AND BEHAVIOR OF RABBITS IN PHYSIOLOGICAL AND DRUG INDUCED SLEEP; PART III: INFLUENCE OF HYPNOTICS ON SLEEP BEHAVIOR OF RABBITS; DISCUSSION AND SUMMARY. 133672 02-03
- THE CATALEPTIC STATE INDUCED BY KETAMINE: A REVIEW OF THE NEUROPHARMACOLOGY OF ANESTHESIA. 133743 02-03

- MARIHUANA AND SHOCK INDUCED AGGRESSION IN RATS. 133770 02-04
- CHANGES IN THE NEURONS OF CERTAIN SECTIONS OF THE RAT BRAIN DURING MOTOR STIMULATION INDUCED BY PHENAMINE. 133958 02-03
- INDUCTION**
- INDUCTION OR REDUCTION OF CATECHOLAMINE ENZYMES; REGULATION OF CATECHOLAMINE TURNOVER BY VARIATIONS OF ENZYME LEVELS. 122222 02-03
- THE INDUCTION AND ANTAGONISM OF CENTRAL NERVOUS SYSTEM STIMULANT - INDUCED STEREOTYPED BEHAVIOR IN THE CAT. 122569 02-04
- STUDIES ON THE INDUCTION OF SERUM HEMOPEXIN BY PENTOBARBITAL AND POLYCYCLIC HYDROCARBONS. 133733 02-03
- INDUCTOR**
- A STUDY OF VARIOUS SUBSTANCES AND CLASSES OF SUBSTANCES FOR INDUCTOR PROPERTIES. II. COMMUNICATION. 133297 02-01
- INEFFECTIVE**
- NICOTINAMIDE INEFFECTIVE IN PARKINSONISM. 122445 02-11
- PHENITRONE. INEFFECTIVE BLOCKADE OF (-) TRANS-DELTA9-TETRAHYDROCANNABINOL IN MICE AND DOGS. 122448 02-03
- INFANT**
- EFFECTIVENESS OF DIAZEPAM AND METHYLPHENIDATE IN MULTIPLE DOSAGES IN MODIFYING INFANT TRAUMA EFFECTS. 134104 02-04
- INFANTILE**
- UPTAKE AND LOSS OF 14C-DOPAMINE BY PLATELETS FROM CHILDREN WITH INFANTILE AUTISM. 119968 02-11
- INFLAMMATION**
- THE EFFECT OF EXPERIMENTAL LOCAL INFLAMMATION ON THE ACTION OF BARBITURATES IN RAT. 133126 02-03
- INFLUENCE**
- THE BEHAVIOR OF WORKER AND NON-WORKER RATS UNDER THE INFLUENCE OF (-)DELTA9-TRANS-TETRAHYDROCANNABINOL, CHLORPROMAZINE AND AMYLOBARBITONE. 119981 02-04
- THE INFLUENCE OF ADRENALECTOMY, HYPOPHYSECTOMY, THYROIDECTOMY, CASTRATION, AND TESTOSTERONE ON APOMORPHINE INDUCED AGGRESSIVE BEHAVIOUR IN THE RAT. 120790 02-04
- THE INFLUENCE OF SOME CENTRALLY ACTING DRUGS ON SYMPATHETIC NERVE ACTIVITY. 121308 02-03
- THE INFLUENCE OF SEMICARBAZIDE INDUCED DEPLETION OF GAMMA-AMINOBUTYRIC ACID ON PRESYNAPTIC INHIBITION. 121963 02-03
- THE DEVELOPMENT OF FIXED-RATIO PERFORMANCE UNDER THE INFLUENCE OF RIBONUCLEIC ACID. 129423 02-04
- INFLUENCE OF L-DOPA ON NIGHT SLEEP IN PARKINSONIAN PATIENTS. 133569 02-03
- INFLUENCE OF ALCOHOL INTAKE, LENGTH OF ABSTINENCE AND MEPROMAMATE ON THE RATE OF ETHANOL METABOLISM IN MAN. 133599 02-11
- ELECTROENCEPHALOGRAPH AND BEHAVIOR OF RABBITS IN PHYSIOLOGICAL AND DRUG INDUCED SLEEP. PART III: INFLUENCE OF HYPNOTICS ON SLEEP BEHAVIOR OF RABBITS; DISCUSSION AND SUMMARY. 133672 02-03
- INFLUENCES**
- PSYCHOTROPIC DRUG INFLUENCES ON BRAIN ACETYLCHOLINE UTILIZATION. 133474 02-03
- INFLUENCING**
- FACTORS INFLUENCING RESPONSE TO MAJOR TRANQUILIZER MEDICATIONS. 123887 02-09
- INFUSION**
- EFFECT OF INTRAVENTRICULAR INFUSION OF DOPAMINE AND NOREPINEPHRINE ON MOTOR ACTIVITY. 121370 02-04
- INGESTION**
- SUICIDAL AND ACCIDENTAL DIGOXIN INGESTION. 121817 02-15
- ALTERED METABOLISM OF SEROTONIN IN THE BRAIN OF THE RAT AFTER CHRONIC INGESTION OF D-AMPHETAMINE. 123938 02-03
- INHALATION**
- INHALATION INDUCED TOLERANCE AND PHYSICAL DEPENDENCE: THE HAZARD OF OPIATE SUFFUSED MARIHUANA. 127693 02-03
- INHIBITION**
- EFFECTS OF CATECHOLAMINE SYNTHESIS INHIBITION ON ETHANOL NARCOSIS IN MICE. 118988 02-03
- INHIBITION OF CATECHOL-O-METHYLTRANSFERASE BY L-DOPA AND DECARBOXYLASE INHIBITORS. 119304 02-03
- METHYLPHENIDATE INDUCED INHIBITION OF EXPLORATORY BEHAVIOR IN RATS. 120219 02-04
- HARMINE TREMOR AFTER BRAIN MONOAMINE OXIDASE INHIBITION IN THE MOUSE. 120236 02-03
- INHIBITION BY ETHYLMORPHINE AND PENTOBARBITONE IN VITRO OF THE METABOLISM OF (UREYL-14C)TOLBUTAMIDE BY HEPATIC MICROSOMAL PREPARATIONS FROM MALE AND FEMALE RATS TREATED WITH PHENOBARBITONE. 121181 02-03
- INHIBITION OF DOPADECARBOXYLASE IN THE RAT BY A SERIES OF BENZYLOXYAMINES. 121314 02-03
- P-CHLOROAMPHETAMINE - INHIBITION OF CEREBRAL TRYPTOPHAN HYDROXYLASE. 121354 02-03
- INHIBITION OF CATECHOLAMINE OXIDATION BY INDOLES. 121357 02-03
- FURTHER CHARACTERIZATION OF A REDUCED NICOTINAMIDE ADENINE DINUCLEOTIDE PHOSPHATE DEPENDENT ALDEHYDE REDUCTASE FROM BOVINE BRAIN. INHIBITION BY PHENOTHIAZINE DERIVATIVES. 121634 02-03
- THE INFLUENCE OF SEMICARBAZIDE INDUCED DEPLETION OF GAMMA-AMINOBUTYRIC ACID ON PRESYNAPTIC INHIBITION. 121963 02-03
- INHIBITION OF DOPA DECARBOXYLATION BY RO-4-4602, MK-485 AND MK-486 IN HUMAN LIVER HOMOGENATES. 122081 02-03
- COMPARATIVE STUDY ON THE INHIBITION OF NA<sup>+</sup>, K<sup>+</sup> ACTIVATED ATPASE ACTIVITY BY CHLORPROMAZINE, PROMAZINE, IMIPRAMINE, AND THEIR MONODESMETHYL METABOLITES. 122091 02-03
- PALLIDAL AND TEGMENTAL INHIBITION OF OSCILLATORY SLOW WAVES AND UNIT ACTIVITY IN THE SUBTHALAMIC NUCLEUS. 122204 02-03
- ALLEVIATION OF BARBITURATE INHIBITION ON THE OXIDATIVE ACTIVITY OF SUBMITOCHONDRIAL PARTICLES BY ALKALI. 122230 02-03
- CALCIUM EFFLUX AND RESPIRATORY INHIBITION IN BRAIN MITOCHONDRIA: EFFECTS OF CHLORPROMAZINE METABOLITES. 122535 02-03
- INHIBITION OF GABA TRANSAMINASE AND SLEEP IN THE RAT. 124160 02-03
- ACTIVATION AND INHIBITION OF LIPOLYSIS IN ISOLATED FAT CELLS BY VARIOUS INHIBITORS OF CYCLIC-AMP PHOSPHODIESTERASE. 124170 02-03
- CONVULSIVE PROPERTIES OF D-TUBOCURARINE AND CORTICAL INHIBITION. 125673 02-03
- THE EFFECTS OF ANESTHETICS ON SYNAPTIC EXCITATION AND INHIBITION IN THE OLFACTORY BULB. (UNPUBLISHED PAPER). 132508 02-03
- INHIBITION OF HEPATIC MICROSOMAL DRUG METABOLISM BY THE HYDRAZINES RO-4-4602, MK-486, AND PROCARBAZINE HYDROCHLORIDE. 132893 02-03
- SUBSTRATE SELECTIVE AND TISSUE SELECTIVE INHIBITION OF MONOAMINE OXIDASE. 133212 02-03
- TREMOR INHIBITION IN PARKINSON SYNDROME AFTER APOMORPHINE ADMINISTRATION UNDER L-DOPA AND DECARBOXYLASE INHIBITOR BASIC THERAPY. 133262 02-11
- PHARMACOLOGICAL INHIBITION OF EATING, DRINKING AND PRANDIAL DRINKING. 133679 02-04
- SUBSTITUTED 3,4,5 TRIMETHOXYBENZAMIDES: CORRELATION BETWEEN INHIBITION OF PYRUVIC ACID OXIDATION AND ANTICONVULSANT ACTIVITY. 133745 02-03
- LEVODOPA COMBINED WITH PERIPHERAL DECARBOXYLASE INHIBITION IN PARKINSONS DISEASE. 133807 02-13
- INHIBITION OF EXTRAPYRAMIDAL SIDE-EFFECTS OF HALOPERIDOL THROUGH THE JOINT USE OF IMIPRAMINE-TYPE DRUGS. 134326 02-15
- INHIBITOR**
- EFFECTS OF A DOPAMINE DA-BETA-HYDROXYLASE INHIBITOR ON TIMING BEHAVIOUR. 120013 02-04



- EFFECTS OF PERIPHERAL AROMATIC L-AMINO ACIDS DECARBOXYLASE INHIBITOR ON L-(2-14C)-3,4 DIHYDROXYPHENYLALANINE METABOLISM IN MAN. 121301 02-11
- IDIOPATHIC ORTHOSTATIC HYPOTENSION TREATED WITH LEVODOPA AND MAO INHIBITOR: A PRELIMINARY REPORT. 122102 02-13
- CEREBRAL AND PERIPHERAL UTILIZATION OF L-DOPA IN PATIENTS WITH PARKINSONISM, DEPRESSIVE OR MANIC SYNDROMES UNDER L-DOPA PERFUSION WITH OR WITHOUT A DECARBOXYLASE INHIBITOR. 133175 02-13
- TREATMENT OF PARKINSONS DISEASE WITH L-DOPA AND DECARBOXYLASE INHIBITOR. 133198 02-13
- TREMOR INHIBITION IN PARKINSON SYNDROME AFTER APOMORPHINE ADMINISTRATION UNDER L-DOPA AND DECARBOXYLASE INHIBITOR BASIC THERAPY. 133262 02-11
- THE ADVANTAGES OF THE COMBINATION TREATMENT (L-DOPA AND DECARBOXYLASE INHIBITOR) IN THE PARKINSON SYNDROME. 133518 02-11
- INHIBITORS**
- SEROTONIN SYNTHESIS WITH RAT BRAIN SYNAPTOSOMES: EFFECTS OF SEROTONIN AND MONOAMINE OXIDASE INHIBITORS. 119055 02-03
- INHIBITION OF CATECHOL-O-METHYLTRANSFERASE BY L-DOPA AND DECARBOXYLASE INHIBITORS. 119304 02-03
- EFFECTS OF MONOAMINE OXIDASE INHIBITORS ON THE COPULATORY BEHAVIOR OF MALE RATS. 120009 02-04
- SPECIFIC ANTAGONISM BY DOPAMINE INHIBITORS OF ITEMS OF AMPHETAMINE INDUCED AGGRESSIVE BEHAVIOUR. 120791 02-04
- HUMAN BRAIN MONOAMINE OXIDASE: MULTIPLE FORMS AND SELECTIVE INHIBITORS. 120939 02-13
- MONOAMINE OXIDASE INHIBITORS. 122405 02-15
- ACTIVATION AND INHIBITION OF LIPOLYSIS IN ISOLATED FAT CELLS BY VARIOUS INHIBITORS OF CYCLIC-AMP PHOSPHODIESTERASE. 124170 02-03
- INHIBITORY**
- INHIBITORY EFFECTS OF CHRONIC ADMINISTRATION OF MORPHINE ON URIDINE AND THYMIDINE INCORPORATING ABILITIES OF MOUSE LIVER AND BRAIN SUBCELLULAR FRACTIONS. 122245 02-03
- INJECTABLE**
- FLUSPIRILENE AND PIPOTHAZINE UNDECYLENATE, TWO LONG-ACTING INJECTABLE NEUROLEPTICS: A DOUBLE-BLIND CONTROLLED TRIAL IN RESIDUAL SCHIZOPHRENIA. 121544 02-08
- FLUSPIRILENE, AN INJECTABLE, AND PENFLURIDOL, AN ORAL LONG-LASTING, NEUROLEPTIC. 134309 02-08
- INJECTED**
- EFFECT OF MATERNALLY INJECTED SODIUM PENTOBARBITAL DURING THE EMBRYONIC PERIOD OF GESTATION ON LIVER GLYCOGEN LEVELS IN THE RAT FETUS. 122236 02-03
- EFFECTS OF INTRAVENTRICULAR INJECTED 6-HYDROXYDOPAMINE OR MIDBRAIN RAPHE LESION ON MORPHINE ANALGESIA IN RATS. 122396 02-03
- INJECTION**
- THE SPONTANEOUS MOTILITY OF RATS AFTER INTRAVENTRICULAR INJECTION OF DOPAMINE. 121275 02-04
- REVERSAL LEARNING FACILITATED BY A SINGLE INJECTION OF LYSERGIC ACID DIETHYLAMIDE (LSD-25) IN THE RAT. 121303 02-04
- EVALUATION OF PIPERACETAZINE (QUIDE) INJECTION IN ACUTE SCHIZOPHRENICS. 132896 02-08
- EXCITATORY RESPONSES FOLLOWING INTRACAUDATE INJECTION OF N-METHYL-DL-ASPARTIC ACID. 133302 02-02
- COMPARISON OF PERPHENAZINE (TRILAFON TABLETS) WITH PERPHENAZINE ENANTHATE (TRILAFON DEPOT INJECTION) IN A DOUBLE-BLIND TRIAL. 133351 02-08
- DEFICITS IN FEEDING BEHAVIOR AFTER INTRAVENTRICULAR INJECTION OF 6-HYDROXYDOPAMINE IN RATS. 133750 02-03
- CHRONIC EFFECTS OF SINGLE NITROGEN MUSTARD INJECTION ON THE ACTIVITY RESPONSE OF ALBINO RATS. 134101 02-04
- INJECTIONS**
- INTRAHYPOTHALAMIC AND INTRASTRIATAL DOPAMINE AND NOREPINEPHRINE INJECTIONS IN RELATION TO MOTOR HYPERACTIVITY IN RATS. 120019 02-04
- EFFECTS OF INTRAHIPPOCAMPAL INJECTIONS WITH METHYLSCOPOLAMINE AND NEOSTIGMINE UPON EXPLORATORY BEHAVIOUR IN TWO INBRED MOUSE STRAINS. 120789 02-04
- EFFECT OF INTRACEREBRAL INJECTIONS OF CARBAMYLCHOLINE AND ACETYLCHOLINE ON TEMPERATURE REGULATION IN THE CAT. 120811 02-03
- STEREOTYPIC AND ANTICATALEPTIC ACTIVITIES OF AMPHETAMINE AFTER INTRACEREBRAL INJECTIONS. 122573 02-03
- CONDITIONING OF FOOD AVERSIONS BY INJECTIONS OF PSYCHOACTIVE DRUGS. 123983 02-04
- SPECIFICITY OF THE EFFECT OF LITHIUM INJECTIONS ON THE ENTRY OF CARBON ATOMS OF GLUCOSE INTO MOUSE BRAIN IN VIVO. 132777 02-03
- INJURY**
- ALTERED NOREPINEPHRINE METABOLISM FOLLOWING EXPERIMENTAL SPINAL CORD INJURY. PART 2: PROTECTION AGAINST TRAUMATIC SPINAL CORD HEMORRHAGIC NECROSIS BY NOREPINEPHRINE SYNTHESIS BLOCKADE WITH ALPHA-METHYL-TYROSINE. 121067 02-03
- INPATIENTS**
- DECISIONS ABOUT DRUG THERAPY. III. SELECTION OF TREATMENT FOR PSYCHIATRIC INPATIENTS. 131961 02-14
- A PILOT STUDY OF AMOXAPINE (CL-67772) IN DEPRESSED INPATIENTS. 132951 02-07
- INSOMNIA**
- INSOMNIA AND CEREBRAL METABOLISM OF SEROTONIN IN CAT; IN VITRO SYNTHESIS AND RELEASE OF SEROTONIN 18 H AFTER DESTRUCTION OF THE RAPHE NUCLEI. 119684 02-03
- A COMPARATIVE EVALUATION OF TWO HYPNOTIC AGENTS IN GENERAL PRACTICE PATIENTS WITH INSOMNIA. 122430 02-07
- INSTILLATION**
- THE EFFECTS OF CONJUNCTIVAL INSTILLATION OF ESERINE AND HOMATROPINE ON PUPILLARY REACTIVITY IN SCHIZOPHRENICS. 127520 02-13
- INSTRUMENTAL**
- A POSSIBLE CAUDATE CHOLINERGIC MECHANISM IN TWO INSTRUMENTAL CONDITIONED RESPONSES. 133471 02-04
- INSULIN**
- CHLORPROMAZINE INDUCED ALTERNATIONS OF CARBOHYDRATE METABOLISM: EFFECT OF CHLORPROMAZINE PRETREATMENT ON THE INSULIN RESPONSE TO GLUCOSE AND TOLBUTAMIDE IN THE ADRENALECTOMIZED RAT. (PH.D. DISSERTATION). 130182 02-03
- LITHIUM, WEIGHT GAIN, AND SERUM INSULIN IN MANIC-DEPRESSIVE PATIENTS. 134310 02-15
- INTAKE**
- EFFECTS OF PROLONGED PHENOTHIAZINE INTAKE ON PSYCHOTIC AND OTHER HOSPITALIZED CHILDREN. 119969 02-15
- INFLUENCE OF ALCOHOL INTAKE, LENGTH OF ABSTINENCE AND MEPROBAMATE ON THE RATE OF ETHANOL METABOLISM IN MAN. 133599 02-11
- INTEGRATED**
- MEASUREMENT OF PHASIC INTEGRATED POTENTIALS (PIP) DURING TREATMENT WITH P-CHLOROPHENYLALANINE (PCPA). 119394 02-13
- INTELLECTUAL**
- LOW DOSAGE PHENOTHIAZINE THERAPY: EFFECTIVE ANXIOLYTIC ACTION WITHOUT IMPAIRMENT TO INTELLECTUAL FUNCTION. 132715 02-10
- INTERACTION**
- METABOLIC AND PHARMACOLOGIC INTERACTION OF ETHANOL AND METRONIDAZOLE IN THE RAT. 119000 02-03
- L-DOPA AND IMIPRAMINE: BIOCHEMICAL AND BEHAVIORAL INTERACTION. 120228 02-03
- STUDIES ON THE PARADOXICAL INTERACTION OF PHYSOSTIGMINE AND PENTOBARBITAL ON REGIONAL BRAIN ACETYLCHOLINE CONTENT OF VARIOUS ANIMAL SPECIES. 121296 02-03
- INTERACTION OF ANTICHOLINERGIC AGENTS WITH ALPHA-METHYL-P-TYROSINE AND D-AMPHETAMINE. 121306 02-04

- SOME PHARMACOLOGICAL EFFECTS OF PHENITRONE AND ITS INTERACTION WITH DELTA9-THC. 122242 02-04
- INTERACTION OF FENFLURAMINE WITH D-AMPHETAMINE INDUCED EXCITATORY BEHAVIOUR AND HYPERTHERMIA. 122443 02-03
- THYROID IMIPRAMINE CLINICAL AND CHEMICAL INTERACTION: EVIDENCE FOR A RECEPTOR DEFICIT IN DEPRESSION. 127216 02-09
- INTERACTION OF HALLUCINOGENIC DRUGS WITH ENCEPHALITIC PROTEIN OF MYELIN. 128457 02-13
- ESTROGEN - IMIPRAMINE INTERACTION. 128876 02-15
- THE INTERACTION OF DELTA9-TETRAHYDROCANNABINOL WITH COMMONLY USED DRUGS. (UNPUBLISHED PAPER). 130524 02-03
- INTERACTION OF HOUSING CONDITIONS AND CYCLOHEXIMIDE ON MEMORY FORMATION. 131448 02-04
- INTERACTION BETWEEN CHOLINERGIC AND CATECHOLAMINERGIC NEURONES IN RAT BRAIN. 132703 02-03
- THE INTERACTION BETWEEN DESMETHYLIMIPRAMINE AND GUANETHIDINE ON THE RABBIT ILEUM. THE IMPORTANCE OF THE NORADRENALINE UPTAKE PROCESS IN THE REVERSAL OF GUANETHIDINE INDUCED ADRENERGIC NEURONE BLOCKADE. 133214 02-03
- RELATIVE DEGREE OF TOLERANCE TO MORPHINE SULFATE AND METHADONE HYDROCHLORIDE IN THE RAT AND THE INTERACTION OF DEXAMETHASONE. 133293 02-04
- ACTION AND INTERACTION OF CHOLINERGIC AGONISTS AND ANTAGONISTS ON SELF-STIMULATION. 133298 02-04
- INTERACTION BETWEEN NEUROLEPTIC THERAPY AND SOCIO-THERAPEUTIC APPROACH: AN INVESTIGATION WITH PENFLURIDOL AND HALOPERIDOL. 133355 02-08
- A METABOLIC INTERACTION IN VIVO BETWEEN CANNABIDIOL AND DELTA1-TETRAHYDROCANNABINOL. 133741 02-03
- INTERACTION OF THE EFFECT OF LYSERGIC ACID DIETHYLAMIDE AND AMINAZINE AT THE LEVEL OF INDIVIDUAL NEURONS OF THE MIDBRAIN RETICULAR FORMATION. 134457 02-03
- INTERACTIONS**
- DRUG INTERACTIONS AND DIURETIC THERAPY. 122049 02-15
- SPECTRAL INTERACTIONS OF MARIJUANA CONSTITUENTS (CANNABINOIDS) WITH RAT LIVER MICROSOMAL MONOOXYGENASE SYSTEM. 122097 02-03
- THE EFFECT OF CALCIUM AND MAGNESIUM IONS ON DRUG RECEPTOR INTERACTIONS. 122239 02-03
- DRUG INTERACTIONS. 122420 02-15
- INTERACTIONS OF ANGIOTENSIN, PHENOXYBENZAMINE AND PROPRANOLOL ON NORADRENALINE RELEASE DURING SYMPATHETIC NERVE STIMULATION. 122568 02-03
- ETHANOL PREFERENCE IN THE RAT: INTERACTIONS BETWEEN BRAIN SEROTONIN AND ETHANOL, ACETALDEHYDE, PARALDEHYDE, 5-HTP AND 5-HTOL. 132682 02-04
- INTERACTIONS OF GUANETHIDINE AND INDIRECT ACTING SYMPATHOMIMETIC AMINES. 133130 02-03
- INTERGENERIC**
- INTERGENERIC BEHAVIORAL DIFFERENCES AMONG METHAMPHETAMINE TREATED MICE. 133379 02-04
- INTERMITTENT**
- ANOREXIGENIC ACTIVITY OF INTERMITTENT DEXTROAMPHETAMINE WITH AND WITHOUT MEPROMAMATE. 119169 02-13
- INTERNAL**
- MASKED DEPRESSION IN INTERNAL MEDICINE - THE FREQUENCY AND CLINICAL CHARACTERISTICS. 125862 02-09
- MASKED DEPRESSION IN VARIOUS FIELDS IN CLINICAL MEDICINE - FROM THE STANDPOINT IN INTERNAL MEDICINE ESPECIALLY IN THE FIELDS OF TREATMENT. 125999 02-09
- HISTOENZYMOLOGIC STUDIES OF THE BRAIN TISSUES AND INTERNAL ORGANS OF EXPERIMENTAL ANIMALS IN A SINGULAR ADMINISTRATION OF LSD-25. 133505 02-03
- INTERNATIONAL**
- INTERNATIONAL CONVENTION ON PSYCHOTROPIC DRUGS. 120735 02-17
- INTERNISTS**
- THE IMPACT OF SCIENTIFIC MODELS ON CLINICAL PSYCHOPHARMACOLOGY: AN INTERNISTS VIEW. 126939 02-17
- INTERPHASIC**
- THE ELECTRIC INTERPHASIC BLOOD POTENTIAL FOR SODIUM AND POTASSIUM IONS IN PATIENTS TREATED WITH CHLORPROMAZINE FOR VARIOUS MENTAL DISORDERS. 133463 02-13
- INTERRELATIONSHIPS**
- CERTAIN OBSERVATIONS ON INTERRELATIONSHIPS BETWEEN RESPIRATORY AND CARDIOVASCULAR EFFECTS OF (-) DELTA9-TRANS-TETRAHYDROCANNABINOL. 122394 02-05
- INTERRUPTED**
- THE EFFECT OF OXAZEPAM ON INTERRUPTED DAY SLEEP AFTER NIGHT WORK. 132785 02-14
- INTERTRIAL**
- EFFECTS OF DRUGS ON INTERTRIAL INTERVAL BEHAVIOR IN DELAYED ALTERNATION. 131284 02-04
- EFFECTS OF INTERTRIAL CROSSING PUNISHMENT AND D-AMPHETAMINE SULFATE ON AVOIDANCE AND ACTIVITY IN FOUR SELECTIVELY BRED RAT STRAINS. 131293 02-04
- INTERVAL**
- EFFECTS OF DRUGS ON INTERTRIAL INTERVAL BEHAVIOR IN DELAYED ALTERNATION. 131284 02-04
- BIPHASIC EFFECTS OF DELTA9-TETRAHYDROCANNABINOL ON VARIABLE INTERVAL SCHEDULE PERFORMANCE IN RATS. (UNPUBLISHED PAPER) 133171 02-04
- FOLLOWUP RESULTS OVER AN INTERVAL OF 9 YEARS WITH CARBAMAZEPINE THERAPY IN EPILEPSY. 133207 02-11
- INTESTINAL**
- THE EFFECT OF PHENOBARBITAL ON INTESTINAL CALCIUM TRANSPORT. 121286 02-05
- INTOXICATION**
- HYPOTHERMIA ASSOCIATED WITH METHADONE INTOXICATION. 121839 02-15
- BROMIDE INTOXICATION. 133240 02-15
- INTRACAUDATE**
- EXCITATORY RESPONSES FOLLOWING INTRACAUDATE INJECTION OF N-METHYL-DL-ASPARTIC ACID. 133302 02-02
- INTRACELLULAR**
- INTRACELLULAR LOCALIZATION AND CO-FACTOR REQUIREMENT OF AMPHETAMINE TETRAZOLIUM REDUCTASE OF GUINEA-PIG BRAIN. 133763 02-03
- INTRACEREBRAL**
- EFFECT OF INTRACEREBRAL INJECTIONS OF CARBAMYLCHOLINE AND ACETYLCHOLINE ON TEMPERATURE REGULATION IN THE CAT. 120811 02-03
- STEREOTYPIC AND ANTICATALEPTIC ACTIVITIES OF AMPHETAMINE AFTER INTRACEREBRAL INJECTIONS. 122573 02-03
- INTRACTABLE**
- TREATMENT OF PREVIOUSLY INTRACTABLE DEPRESSIONS WITH TRANYCYPROMINE AND LITHIUM. 125969 02-09
- INTRAHEPATIC**
- THE EFFECTS OF PHENOBARBITAL ON BILE SALTS AND BILIRUBIN IN PATIENTS WITH INTRAHEPATIC AND EXTRAHEPATIC CHOLESTASIS. 121580 02-13
- INTRAHIPPOCAMPAL**
- EFFECTS OF INTRAHIPPOCAMPAL INJECTIONS WITH METHYLSCOPOLAMINE AND NEOSTIGMINE UPON EXPLORATORY BEHAVIOUR IN TWO INBRED MOUSE STRAINS. 120789 02-04
- LOCOMOTOR ACTIVITY INCREASES PRODUCED BY INTRAHIPPOCAMPAL AND INTRASEPTAL ATROPINE IN RATS. 122391 02-04
- INTRAHYPOTHALAMIC**
- INTRAHYPOTHALAMIC AND INTRAstriatal DOPAMINE AND NOREPINEPHRINE INJECTIONS IN RELATION TO MOTOR HYPERACTIVITY IN RATS. 120019 02-04

## Subject Index

- CLONIDINE INDUCED INTRAHYPOTHALAMIC STIMULATION OF EATING IN RATS.** 122395 02-04
- INTRASEPTAL**  
LOCOMOTOR ACTIVITY INCREASES PRODUCED BY INTRAHIPPOCAMPAL AND INTRASEPTAL ATROPINE IN RATS. 122391 02-04
- INTRASTRIATAL**  
INTRAHYPOTHALAMIC AND INTRASTRIATAL DOPAMINE AND NOREPINEPHRINE INJECTIONS IN RELATION TO MOTOR HYPERACTIVITY IN RATS. 120019 02-04
- INTRAVENOUS**  
INTRAVENOUS DIAZEPAM FOR FACILITATING RELAXATION FOR DESENSITIZATION. 121397 02-10  
TONIC STATUS-EPILEPTICUS PRECIPITATED BY INTRAVENOUS DIAZEPAM IN A CHILD WITH PETIT-MAL STATUS. 123629 02-13  
TONIC STATUS-EPILEPTICUS PRECIPITATED BY INTRAVENOUS BENZODIAZEPINE IN FIVE PATIENTS WITH LENNOX-GASTAUT SYNDROME. 123636 02-13  
DELIRIUM TREMENS: A COMPARISON OF INTRAVENOUS TREATMENT WITH DIAZEPAM AND CHLORDIAZEPoxide. 132869 02-11
- INTRAVENOUSLY**  
THROMBOPHLEBITIS WITH DIAZEPAM USED INTRAVENOUSLY. 127405 02-15
- INTRAVENTRICULAR**  
THE SPONTANEOUS MOTILITY OF RATS AFTER INTRAVENTRICULAR INJECTION OF DOPAMINE. 121275 02-04  
EFFECT OF INTRAVENTRICULAR INFUSION OF DOPAMINE AND NOREPINEPHRINE ON MOTOR ACTIVITY. 121370 02-04  
DEFICITS IN FEEDING BEHAVIOR AFTER INTRAVENTRICULAR INJECTION OF 6-HYDROXYDOPAMINE IN RATS. 133750 02-03
- INTRAVENTRICULAR**  
EFFECTS OF INTRAVENTRICULAR INJECTED 6-HYDROXYDOPAMINE OR MIDBRAIN RAPHE LESION ON MORPHINE ANALGESIA IN RATS. 122396 02-03
- INVESTIGATION**  
A DOUBLE-BLIND INVESTIGATION OF A NEW SOPORIFIC DRUG FOR USE WITH DEPRESSIVE PATIENTS. 121599 02-10  
AN INVESTIGATION OF AMPHETAMINE ANOREXIA UNDER THREE MOTIVATIONAL CONDITIONS OF FREE FEEDING. 122956 02-04  
AN INVESTIGATION OF THE PHARMACOLOGICAL PROPERTIES OF HOMOCAROSINE. 133304 02-02  
INTERACTION BETWEEN NEUROLEPTIC THERAPY AND SOCIOTHERAPEUTIC APPROACH: AN INVESTIGATION WITH PENFLURIDOL AND HALOPERIDOL. 133355 02-08
- INVOLUNTARY**  
INVOLUNTARY MOVEMENT DISORDER CAUSED BY METHYLDOPA. 120853 02-13
- INVOLVED**  
GASTRIC LESIONS INDUCED BY RESTRAINT AND COLD EXPOSURE: ARE CENTRAL ADRENERGIC MECHANISMS INVOLVED. (UNPUBLISHED PAPER). 129461 02-03
- INVOLVEMENT**  
THE RESPECTIVE INVOLVEMENT OF NORADRENALINE AND ITS DEAMINATED METABOLITES IN WAKING AND PARADOXICAL SLEEP: A NEUROPHARMACOLOGICAL MODEL. 119683 02-03  
ON THE INVOLVEMENT OF THE CAUDATE-PUTAMEN, GLOBUS-PALLIDUS AND SUBSTANTIA-NIGRA WITH NEUROLEPTIC AND CHOLINERGIC MODIFICATION OF LOCOMOTOR ACTIVITY. 121274 02-03  
SEROTONERGIC AND CHOLINERGIC INVOLVEMENT IN HABITUATION OF ACTIVITY AND SPONTANEOUS ALTERNATION OF RATS IN A Y-MAZE. 131131 02-03
- IONS**  
THE EFFECT OF CALCIUM AND MAGNESIUM IONS ON DRUG RECEPTOR INTERACTIONS. 122239 02-03  
THE ELECTRIC INTERPHASIC BLOOD POTENTIAL FOR SODIUM AND POTASSIUM IONS IN PATIENTS TREATED WITH CHLORPROMAZINE FOR VARIOUS MENTAL DISORDERS. 133463 02-13
- IRRITABLE**  
DRUG USAGE IN THE IRRITABLE COLON SYNDROME. 121779 02-17

## Psychopharmacology Abstracts

- ISOERGINE**  
PHYSIOLOGICAL DISPOSITION OF ISOERGINE (FROM ARGYREIA-NERVOSA (BURM. F.) BOJER-CONVOLVULACEAE) AND ITS EFFECT ON THE CONDITIONED AVOIDANCE RESPONSE IN RATS. 120012 02-03
- ISOLATED**  
EFFECTS OF PHENOTHIAZINES ON AMINO ACID TRANSPORT AND PROTEIN SYNTHESIS IN ISOLATED NERVE ENDINGS. 119056 02-03  
THE EFFECTS OF PROCAINE, AMYLOBARBITONE ON DRUG-INDUCED CHANGES IN THE SURFACE POTENTIALS OF AN ISOLATED SYMPATHETIC GANGLION. 121302 02-03  
DECREASE OF RIBONUCLEASE ACTIVITY OF ISOLATED RAT LIVER CYTOPLASMIC RIBOSOMES AFTER THE PHENOBARBITAL ADMINISTRATION. 121326 02-03  
PROLONGED METABOLISM OF PENTOBARBITAL IN ISOLATED PERFUSED LIVER OF TUMOR BEARING RATS. 122167 02-03  
THE EFFECTS OF PROPRANOLOL AND ELECTRICAL STIMULATION ON THE CYCLIC 3,5 AMP CONTENT OF ISOLATED CEREBRAL TISSUE. 122357 02-03  
HABITUATION TO LIGHT AND SPONTANEOUS ACTIVITY IN THE ISOLATED SIPHON OF APLYSIA: THE EFFECTS OF SYNAPTICALLY ACTIVE PHARMACOLOGICAL AGENTS. (PH.D. DISSERTATION). 123950 02-04  
ACTIVATION AND INHIBITION OF LIPOLYSIS IN ISOLATED FAT CELLS BY VARIOUS INHIBITORS OF CYCLIC-AMP PHOSPHODIESTERASE. 124170 02-03  
VASOCONSTRICTION PRODUCED BY HALLUCINOGENS ON ISOLATED HUMAN AND SHEEP UMBILICAL VASCULATURE. 132994 02-13  
ULTRASTRUCTURAL CHANGES IN ISOLATED RAT BRAIN MITOCHONDRIA. 133048 02-03
- ISOLATION**  
ISOLATION OF METABOLITES OF L-DOPA - A POSSIBLE SOURCE OF ERROR. 122165 02-03  
THE EFFECTS OF ENVIRONMENTAL ISOLATION ON BEHAVIOR AND REGIONAL RAT BRAIN TYROSINE HYDROXYLASE AND TRYPTOPHAN HYDROXYLASE ACTIVITIES. 133715 02-03
- ISOTOPE**  
OPIUM ALKALOIDS XII: QUANTITATIVE DETERMINATION OF MORPHINE IN OPIUM BY ISOTOPE DILUTION. 133744 02-06
- ITEMS**  
SPECIFIC ANTAGONISM BY DOPAMINE INHIBITORS OF ITEMS OF AMPHETAMINE INDUCED AGGRESSIVE BEHAVIOUR. 120791 02-04
- JEALOUSY**  
MORBID JEALOUSY: CLINICAL TESTING OF TREATMENT WITH PROPERICIAZINE. 133172 02-11
- JULIUS**  
JULIUS AXELROD: A TRIUMPH FOR CREATIVE RESEARCH. 133098 02-17  
PERSPECTIVES IN NEUROPHARMACOLOGY: A TRIBUTE TO JULIUS AXELROD. 133110 02-17
- JUNCTION**  
THE EFFECT OF DIMORPHOLAMINE ON CRAYFISH NEUROMUSCULAR JUNCTION. 132679 02-03
- K.**  
EFFECTS OF SOME ANALGESICS AND ANTIDEPRESSANTS ON THE NA<sub>+</sub> AND K<sub>+</sub> ADENOSINE TRIPHOSPHATASE FROM CORTICES OF BRAIN AND KIDNEY. 121668 02-13
- KAMIN**  
THE EFFECT OF SCOPOLAMINE ON THE KAMIN EFFECT: A TEST OF THE PARASYMPATHETIC OVERREACTION HYPOTHESIS. 127023 02-04
- KETAMINE**  
NEUROPSYCHIATRIC MANIFESTATIONS OF KETAMINE HYDROCHLORIDE. 122738 02-14  
PSYCHOSIS AND KETAMINE. 122883 02-14  
PSYCHOSIS AND KETAMINE. 122884 02-15  
THE CATALEPTIC STATE INDUCED BY KETAMINE: A REVIEW OF THE NEUROPHARMACOLOGY OF ANESTHESIA. 133743 02-03
- KIDNEY**  
EFFECTS OF SOME ANALGESICS AND ANTIDEPRESSANTS ON THE NA<sub>+</sub> AND K<sub>+</sub> ADENOSINE TRIPHOSPHATASE FROM CORTICES OF BRAIN AND KIDNEY. 121668 02-13

- KINASE**  
BRAIN MICROSOMAL PROTEIN KINASE IN THE CHRONICALLY MORPHINIZED RAT. 121355 02-03
- L-AMINO**  
EFFECTS OF PERIPHERAL AROMATIC L-AMINO ACIDS DECARBOXYLASE INHIBITOR ON L-(2-14C)-3,4 DIHYDROXYPHENYLALANINE METABOLISM IN MAN. 121301 02-11
- L-DIHYDROXYPHENYLALANINE**  
EFFECT OF L-DIHYDROXYPHENYLALANINE ON METHYLATION OF 3H-NOREPINEPHRINE AND 3H-HISTAMINE. 122168 02-03
- L-DOPA**  
SPASMODIC TORTICOLLIS AND L-DOPA: RESULTS OF THERAPEUTIC TRIAL IN SIX PATIENTS. 119029 02-13  
L-DOPA IN PARKINSONISM: A POSSIBLE MECHANISM OF ACTION. 119030 02-03  
EFFECT OF L-DOPA ON ELECTROMYOGRAPH AND HEART RATE OF PARKINSONIANS. 119246 02-13  
INHIBITION OF CATECHOL-O-METHYLTRANSFERASE BY L-DOPA AND DECARBOXYLASE INHIBITORS. 119304 02-03  
L-DOPA AND IMIPRAMINE: BIOCHEMICAL AND BEHAVIORAL INTERACTION. 120228 02-03  
EFFECTS OF L-DOPA ON THE EEG AND BRAIN AMINES OF UNRESTRAINED RATS. 121063 02-03  
TREATMENT OF PARKINSONS DISEASE WITH AMANTADINE AND L-DOPA. 121175 02-15  
THE EFFECT OF L-DOPA AND (.) AMPHETAMINE ON THE LOCOMOTOR ACTIVITY AFTER PIMOZIDE AND PHENOXYBENZAMINE. 121317 02-04  
SOME QUANTITATIVE BEHAVIORAL CHANGES IN L-DOPA THERAPY. 121884 02-14  
PERSPECTIVES OF PARKINSONIAN THERAPY WITH L-DOPA. 122083 02-11  
ISOLATION OF METABOLITES OF L-DOPA - A POSSIBLE SOURCE OF ERROR. 122165 02-03  
METABOLISM OF 3,4 DIHYDROXYPHENYLALANINE (L-DOPA) IN HUMAN SUBJECTS. 122166 02-13  
TIME DEPENDENT CHANGES IN BRAIN 3H-NOREPINEPHRINE DISAPPEARANCE CAUSED BY L-DOPA ADMINISTRATION. 122170 02-03  
SUICIDE ON L-DOPA. 124139 02-15  
A PRELIMINARY STUDY OF SELECTED EMOTIONAL CHANGES IN PARKINSONIANS ON L-DOPA THERAPY. 125809 02-14  
COMMENTS ON THE ADVERSE EFFECT OF CONCURRENT PYRIDOXINE ADMINISTRATION ON THE EFFICACY OF L-DOPA IN TREATING PARKINSONISM. 133097 02-13  
CEREBRAL AND PERIPHERAL UTILIZATION OF L-DOPA IN PATIENTS WITH PARKINSONISM, DEPRESSIVE OR MANIC SYNDROMES UNDER L-DOPA PERFUSION WITH OR WITHOUT A DECARBOXYLASE INHIBITOR. 133175 02-13  
TREATMENT OF PARKINSONS DISEASE WITH L-DOPA AND DECARBOXYLASE INHIBITOR. 133198 02-13  
TREMOR INHIBITION IN PARKINSON SYNDROME AFTER APOMORPHINE ADMINISTRATION UNDER L-DOPA AND DECARBOXYLASE INHIBITOR BASIC THERAPY. 133262 02-11  
THE EFFECT OF L-DOPA ON CORTICAL AND SUBCORTICAL ELECTRICAL ACTIVITY IN NORMAL UNRESTRAINED RATS. 133294 02-03  
NEUROPSYCHOLOGICAL AND ELECTROMYOGRAPHIC STUDIES ON THE SHORT-TERM PSYCHOTROPIC EFFECT OF L-DOPA. 133347 02-14  
THE ADVANTAGES OF THE COMBINATION TREATMENT (L-DOPA AND DECARBOXYLASE INHIBITOR) IN THE PARKINSON SYNDROME. 133518 02-11  
INFLUENCE OF L-DOPA ON NIGHT SLEEP IN PARKINSONIAN PATIENTS. 133569 02-03  
L-DOPA, DOPAMINE, AND HYPOMANIA. 134119 02-15
- L-TRYPTOPHAN**  
THE COMPARATIVE ANTIDEPRESSANT VALUE OF L-TRYPTOPHAN AND IMIPRAMINE WITH AND WITHOUT ATTEMPTED POTENTIATION BY LIOTHYRONINE. 120995 02-09
- BEHAVIORAL AND METABOLIC EFFECTS OF L-TRYPTOPHAN IN UNIPOLAR DEPRESSED PATIENTS. (UNPUBLISHED PAPER) 132989 02-09
- L-5-HYDROXYTRYPTOPHAN**  
BEHAVIORAL CHANGES OF CHRONIC SCHIZOPHRENIC PATIENTS GIVEN L-5-HYDROXYTRYPTOPHAN. 132977 02-08
- LABELLED**  
THE EFFECT OF THE NEURONAL EXCITANT N-METHYL-D-ASPARTATE ON THE METABOLISM OF MOUSE BRAIN AMINO ACIDS LABELLED FROM (14C)BICARBONATE AND L-(U-14C)ASPARTATE. 121965 02-03  
EFFECT OF ACTH ON THE SYNTHESIS OF RAPIDLY LABELLED RNA IN THE NERVOUS SYSTEM OF MICE. 132695 02-03
- LABORATORY**  
SOME PHARMACOLOGICAL AND TOXICOLOGICAL EFFECTS OF 1-TRANS-DELTA8-THC AND 1-TRANS-DELTA9-TETRAHYDROCANNABINOL IN LABORATORY RODENTS. 133290 02-05
- LABYRINTH**  
THE EFFECT OF TRANSAMINE ON THE MONOAMINE OXIDASE ACTIVITY AND PSYCHONEURAL BEHAVIOR IN RATS IN A LABYRINTH. 133674 02-04
- LARUS**  
THE EFFECTS OF SOME PHENOTHIAZINE DERIVATIVES ON THE BEHAVIOR OF WILD HERRING GULLS. (LARUS A. ARGENTATUS PONTOPP). 133381 02-04
- LATENCY**  
PREINJECTION TIME OF SCOPOLAMINE AND STEP-DOWN LATENCY IN MICE. 120097 02-04
- LATERAL**  
MORPHINE ENHANCES LATERAL HYPOTHALAMIC SELF-STIMULATION IN THE RAT. 121882 02-04  
SCHEDULE CONTROLLED AND DRUG-INDUCED RELEASE OF NOREPINEPHRINE-7-3H INTO THE LATERAL VENTRICLE OF RATS. 132689 02-03
- LAUGHTER**  
CASUISTIC CONTRIBUTION TO THE PROBLEM OF COMPULSIVE LAUGHTER. 126994 02-13
- LEARNED**  
CHOLINERGIC AND ADRENERGIC EFFECTS OF ATROPINE AND PHYSOSTIGMINE ON BRAIN CHEMISTRY AND LEARNED BEHAVIOR. 122228 02-04  
LEARNED BEHAVIOR AND LIMBIC SYSTEM ACTIVITY IN EXPERIMENTAL PORPHYRIA. 122706 02-03  
EFFECTS OF LITHIUM CHLORIDE ON LEARNED RESPONSES: ACQUISITION, RETENTION, AND EXPRESSION. 128338 02-04  
LEARNED BEHAVIORAL TOLERANCE TO MARIJUANA IN RATS. 131281 02-04
- LEARNING**  
EFFECTS OF ACETOXYCYCLOHEXIMIDE ON APPETITIVE LEARNING AND MEMORY. 119442 02-04  
REVERSAL LEARNING FACILITATED BY A SINGLE INJECTION OF LYSERGIC ACID DIETHYLAMIDE (LSD-25) IN THE RAT. 121303 02-04  
DESYNCHRONIZED SLEEP DEPRIVATION: LEARNING DEFICIT AND ITS REVERSAL BY INCREASED CATECHOLAMINES. 121361 02-04  
EFFECTS OF PUROMYCIN ON LEARNING IN THE TOAD. 121507 02-04  
ROLE OF BRAIN AMINES IN LEARNING ASSOCIATED WITH AMPHETAMINE STATE. 122201 02-04  
PRENATAL CHLORPROMAZINE TREATMENT AND ADULT AVOIDANCE LEARNING. 131280 02-04  
DRUG EFFECTS ON BASELINE GO/NO-GO DISCRIMINATION AND SERIAL DISCRIMINATION REVERSAL LEARNING. 131285 02-04  
THE EFFECTS OF A MARIJUANA EXTRACT ON TWO-CHOICE DISCRIMINATION LEARNING IN THE SQUIRREL MONKEY. 131445 02-04  
DELTA9-TETRAHYDROCANNABINOL USED AS DISCRIMINATIVE STIMULUS FOR RATS IN POSITION LEARNING IN A T-SHAPED WATER MAZE. 133547 02-04  
EFFECTS OF TWO ANTIDEPRESSANTS UPON CONCEPT LEARNING: PSYCHOPHYSIOLOGICAL PARAMETERS IN DEPRESSED HUMANS. 134850 02-08
- LEECH**  
EFFECT OF PHENOBARBITAL ON A LEECH NEURON. 132678 02-03



# Subject Index

# Psychopharmacology Abstracts

- LEGHORN**  
EFFECT OF CARBARYL (1-NAPHTHYL-N-METHYLCARBAMATE) ON PENTOBARBITAL INDUCED SLEEPING TIME AND SOME LIVER MICROSOMAL ENZYMES IN WHITE LEGHORN COCKERELS. 121836 02-03
- LENGTH**  
TOLERANCE TO DELTA9-THC UNDER DELAYED MATCHING-TO-SAMPLE TASKS IN CHIMPANZEES: EFFECTS OF DELAY LENGTH. 131450 02-04  
INFLUENCE OF ALCOHOL INTAKE, LENGTH OF ABSTINENCE AND MEPROBAMATE ON THE RATE OF ETHANOL METABOLISM IN MAN. 133599 02-11
- LENNOX-GASTAUT**  
TONIC STATUS-EPILEPTICUS PRECIPITATED BY INTRAVENOUS BENZODIAZEPINE IN FIVE PATIENTS WITH LENNOX-GASTAUT SYNDROME. 123636 02-13
- LESION**  
EFFECTS OF INTRAVENTRICULAR INJECTED 6-HYDROXYDOPAMINE OR MIDBRAIN RAPHE LESION ON MORPHINE ANALGESIA IN RATS. 122396 02-03  
TYROSINE HYDROXYLATION IN THE RAT STRIATUM IN VITRO AND IN VIVO AFTER NIGRAL LESION AND CHLORPROMAZINE TREATMENT. 132683 02-03
- LESIONING**  
THE EFFECTS OF SELECTIVE LESIONING OF BRAIN SEROTONIN OR CATECHOLAMINE CONTAINING NEURONES ON THE ANORECTIC ACTIVITY OF FENFLURAMINE AND AMPHETAMINE. 122243 02-03
- LESIONS**  
SYNAPTOSOMES FROM FOREBRAIN OF RATS WITH MIDBRAIN RAPHE LESIONS: SELECTIVE REDUCTION OF SEROTONIN UPTAKE. 124188 02-03  
EFFECTS OF PSYCHOTROPIC DRUGS ON EMOTIONAL BEHAVIOR IN RATS WITH LIMBIC LESIONS, WITH SPECIAL REFERENCE TO OLFACTORY BULB ABLATIONS. 128458 02-04  
GASTRIC LESIONS INDUCED BY RESTRAINT AND COLD EXPOSURE: ARE CENTRAL ADRENERGIC MECHANISMS INVOLVED. (UNPUBLISHED PAPER). 129461 02-03  
GASTRIC LESIONS INDUCED BY RESTRAINT AND COLD EXPOSURE: A STUDY OF CENTRAL MONOAMINERGIC MECHANISM. (UNPUBLISHED PAPER). 132367 02-03
- LEUKEMIA**  
TRANSFORMATION OF FISCHER RAT EMBRYO CELLS BY THE COMBINED ACTION OF MURINE LEUKEMIA VIRUS AND (-) TRANS-DELTA9-TETRAHYDROCANNABINOL. 121287 02-03
- LEVEL**  
STRENGTH OF THE NERVOUS SYSTEM AS A FUNCTION OF PERSONALITY TYPE AND LEVEL OF AROUSAL. 119068 02-14  
ACETYLCHOLINE LEVEL IN BRAIN STRUCTURES OF RATS FOLLOWING ADMINISTRATION OF LYSERGIC ACID DIETHYLAMIDE. 125256 02-03  
EFFECT OF THE IMIPRAMINE GROUP OF ANTIDEPRESSANTS ON THE SEROTONIN LEVEL AND ACTIVITY OF 5-OXYTRYPTOPHANDECARBOXYLASE IN THE BRAIN OF ALBINO RATS. 125260 02-03  
INTERACTION OF THE EFFECT OF LYSERGIC ACID DIETHYLAMIDE AND AMINAZINE AT THE LEVEL OF INDIVIDUAL NEURONS OF THE MIDBRAIN RETICULAR FORMATION. 134457 02-03
- LEVELS**  
STEADY-STATE LEVELS OF PROBENECID AND THEIR RELATION TO ACID MONOAMINE METABOLITES IN HUMAN CEREBROSPINAL FLUID. 119985 02-03  
EFFECT OF CENTRAL STIMULANTS AND DEPRESSANTS ON MOUSE BRAIN ACETYLCHOLINE AND CHOLINE LEVELS. 120232 02-03  
THE EFFECTS OF CHRONIC IMIPRAMINE ADMINISTRATION ON RAT BRAIN LEVELS OF SEROTONIN, 5-HYDROXYINDOLEACETIC ACID, MOREPINEPHRINE AND DOPAMINE. 120359 02-03  
DYNAMICS OF THE REGULATION OF HISTAMINE LEVELS IN MOUSE BRAIN. 121072 02-03  
EFFECTS OF AMPHETAMINE AND PILOCARPINE ON EATING BEHAVIOR IN RATS WITH CHRONICALLY LOW ACETYLCHOLINESTERASE LEVELS. 121177 02-04  
EFFECT OF PRETREATMENT WITH SPIRONOLACTONE, PHENOBARBITAL OR BETA-DIETHYLAMINOETHYL DIPHENYLPROPYL-ACETATE (SKF-525-A) ON TRITIUM LEVELS IN BLOOD, HEART AND LIVER OF RATS AT VARIOUS TIMES AFTER ADMINISTRATION OF 3H-DIGITOXIN. 121243 02-03
- INDUCTION OR REDUCTION OF CATECHOLAMINE ENZYMES: REGULATION OF CATECHOLAMINE TURNOVER BY VARIATIONS OF ENZYME LEVELS. 122222 02-03**  
**EFFECT OF MATERNALLY INJECTED SODIUM PENTOBARBITAL DURING THE EMBRYONIC PERIOD OF GESTATION ON LIVER GLYCOGEN LEVELS IN THE RAT FETUS. 122236 02-03**  
**CEREBROSPINAL FLUID LEVELS OF MHPG IN AFFECTIVE DISORDERS. 124330 02-13**  
**ACUTE EFFECTS OF DIPHENYLHYDANTOIN IN RELATION TO PLASMA LEVELS. 125029 02-13**  
**CHLORDIAZEPOXIDE PLASMA LEVELS AND CLINICAL RESPONSES. 127857 02-14**  
**BLOOD LEVELS OF ANTIEPILEPTIC DRUGS - CHEMICAL DETERMINATION OF ANTIEPILEPTIC DRUGS IN BODY FLUIDS. 129211 02-06**  
**DELTA9-TETRAHYDROCANNABINOL: TEMPORAL CORRELATION OF THE PSYCHOLOGIC EFFECTS AND BLOOD LEVELS AFTER VARIOUS ROUTES OF ADMINISTRATION. 131610 02-14**
- LEVODOPA**  
LEVODOPA AND DEXTROAMPHETAMINE: COMPARATIVE EFFICACY IN THE HYPERKINETIC SYNDROME: ASSESSMENT BY TARGET SYMPTOMS. 129834 02-14
- LEVODOPA**  
SIDE-EFFECTS FROM LEVODOPA. 121477 02-15  
IDIOPATHIC ORTHOSTATIC HYPOTENSION TREATED WITH LEVODOPA AND MAO INHIBITOR: A PRELIMINARY REPORT. 122102 02-13  
STRIATONIGRAL DEGENERATION RESPONSE TO LEVODOPA THERAPY. 122171 02-11  
LEVODOPA COMBINED WITH PERIPHERAL DECARBOXYLASE INHIBITION IN PARKINSONS DISEASE. 133807 02-13
- LEVOMEPROMAZINE**  
PREVENTION OF TRAUMATIC SHOCK WITH LEVOMEPROMAZINE UNDER EXPERIMENTAL CONDITIONS. 125263 02-03
- LIBRIUM**  
SINGLE VERSUS REPEATED DOSAGE OF THE MINOR TRANQUILIZER CHLORDIAZEPOXIDE (LIBRIUM). 120655 02-17  
BUTISOL SODIUM VS. LIBRIUM AMONG GERIATRIC AND YOUNGER OUTPATIENTS AND NURSING HOME PATIENTS. 123885 02-10
- LIFT**  
USING HORMONE TO LIFT DEPRESSION. 133152 02-09
- LIGHT**  
DRUG EFFECTS ON UNCONDITIONED LIGHT AVOIDANCE IN THE RAT. 120787 02-04  
HABITUATION TO LIGHT AND SPONTANEOUS ACTIVITY IN THE ISOLATED SIPHON OF APLYSIA: THE EFFECTS OF SYNAPTICALLY ACTIVE PHARMACOLOGICAL AGENTS. (PH.D.DISSERTATION). 123950 02-04
- LIGHTING**  
ETHANOL CONSUMPTION BY RATS UNDER DIFFERENT LIGHTING CONDITIONS. 120399 02-05
- LIMB**  
LIMB DEFORMITIES ASSOCIATED WITH IMINODIBENZYL HYDROCHLORIDE. 122094 02-15
- LIMBIC**  
LEARNED BEHAVIOR AND LIMBIC SYSTEM ACTIVITY IN EXPERIMENTAL PORPHYRIA. 122706 02-03  
EFFECTS OF PSYCHOTROPIC DRUGS ON EMOTIONAL BEHAVIOR IN RATS WITH LIMBIC LESIONS, WITH SPECIAL REFERENCE TO OLFACTORY BULB ABLATIONS. 128458 02-04
- LIMBITROL**  
A CLINICAL STUDY OF LIMBITROL IN THE TREATMENT OF ANXIETY/DEPRESSION IN GENERAL PRACTICE. 121309 02-10
- LIOTHYRONINE**  
THYROID FUNCTION AND THE RESPONSE TO LIOTHYRONINE IN DEPRESSION. 120994 02-13  
THE COMPARATIVE ANTIDEPRESSANT VALUE OF L-TRYPTOPHAN AND IMIPRAMINE WITH AND WITHOUT ATTEMPTED POTENTIATION BY LIOTHYRONINE. 120995 02-09

## LIPOLYSIS

STUDIES ON THE MECHANISM OF AMPHETAMINE INDUCED LIPOLYSIS IN THE RAT. 119031 02-03

ACTIVATION AND INHIBITION OF LIPOLYSIS IN ISOLATED FAT CELLS BY VARIOUS INHIBITORS OF CYCLIC-AMP PHOSPHODIESTERASE. 124170 02-03

## LITHIUM

BIOCHEMISTRY OF DEPRESSION (A REVIEW OF THE LITERATURE). 120821 02-13

THERAPEUTIC APPROACHES TO TARDIVE DYSKINESIA: A REVIEW OF THE LITERATURE. 126229 02-14

TREATMENT OF DEPRESSIONS WITH CHLORIMIPRAMINE: LITERATURE REVIEW AND CLINICAL STUDIES. 133315 02-07

LSD PSYCHOTHERAPY: A REVIEW OF THE LITERATURE AND SOME PROPOSALS FOR FUTURE RESEARCH. 13576 02-12

## LITHIUM

LITHIUM THERAPY FOR MANIC-DEPRESSIVES IN A LARGE, POOR, SPARSELY POPULATED CATCHMENT AREA. 119045 02-09

INCREASED CALCIUM AND MAGNESIUM EXCRETION INDUCED BY LITHIUM CARBONATE. 119983 02-03

ALTERED CARBOHYDRATE METABOLISM DURING TREATMENT WITH LITHIUM CARBONATE. 120754 02-13

EDEMA AND INCREASED PLASMA RENIN ACTIVITY IN LITHIUM TREATED PATIENTS. 120822 02-09

SEVERE HYPOTHYROIDISM -- AN EARLY COMPLICATION OF LITHIUM THERAPY. 121979 02-15

VARIATIONS IN BLOOD AND URINARY ELECTROLYTES IN THE COURSE OF TREATMENT WITH LITHIUM SALTS. 122313 02-13

TWO CASES OF SEVERE LITHIUM CARBONATE POISONING. 122314 02-15

LITHIUM SALTS IN PSYCHIATRIC THERAPY: CONCERNING THE CURATIVE AND PREVENTIVE TREATMENT. 122315 02-09

PROPHYLACTIC TREATMENT OF MANIC-DEPRESSIVE PSYCHOSIS BY LITHIUM CARBONATE: THEORETICAL AND PRACTICAL CONCERN OF VARIATIONS IN PLASMA CONCENTRATION. 122316 02-13

A COMPARISON OF LITHIUM CARBONATE AND CHLORPROMAZINE IN THE TREATMENT OF EXCITED SCHIZO-AFFECTIVES. 122662 02-08

EEG AND NEUROPHYSIOLOGICAL STUDIES OF LITHIUM IN NORMAL VOLUNTEERS. 122987 02-09

COMMENTS ON TREATMENT: LITHIUM CARBONATE IN MANIC-DEPRESSIVE ILLNESS. 123351 02-09

ACTIVATION OF BRAIN SUCCINATE DEHYDROGENASE BY LITHIUM. 123663 02-03

THE EFFECTS OF ELECTROSHOCK THERAPY, LITHIUM AND TRICYCLIC ANTIDEPRESSANT TREATMENT ON PROBENECID INDUCED ACCUMULATIONS OF CSF AMINE METABOLITES IN DEPRESSED PATIENTS. (UNPUBLISHED PAPER). 125200 02-09

TREATMENT OF PREVIOUSLY INTRACTABLE DEPRESSIONS WITH TRANCYCPROMINE AND LITHIUM. 125969 02-09

A CONTROLLED EVALUATION OF LITHIUM PROPHYLAXIS IN AFFECTIVE DISORDERS. 126205 02-09

LITHIUM CARBONATE IN EMOTIONALLY UNSTABLE CHARACTER DISORDER. 126232 02-09

A LITHIUM CLINIC. 127390 02-09

TARGET SYMPTOMS IN LITHIUM CARBONATE THERAPY. 127854 02-08

LITHIUM CARBONATE PROPHYLAXIS IN AFFECTIVE DISORDERS. (CLINICAL VERSUS RESEARCH APPLICATIONS). 127880 02-09

EFFECTS OF LITHIUM CHLORIDE ON LEARNED RESPONSES: ACQUISITION, RETENTION, AND EXPRESSION. 128338 02-04

EFFECTS OF LITHIUM ON THYROID FUNCTION. 129445 02-13

ACUTE BRAIN SYNDROME ASSOCIATED WITH LITHIUM THERAPY. 129509 02-15

THE EFFECT OF LITHIUM CHLORIDE ON THE ELECTROLYTE COMPOSITION OF CEREBROSPINAL FLUID OF THE RAT. 130355 02-03

MANIA AS A MESSAGE: TREATMENT WITH FAMILY THERAPY AND LITHIUM CARBONATE. 130388 02-09

RELATIONSHIP OF LITHIUM METABOLISM TO MENTAL HOSPITAL ADMISSION AND HOMICIDE. 130473 02-17

PSYCHIATRIC AND BIOCHEMICAL PROFILES OF LITHIUM THERAPY IN MANIA. (CASE REPORT). 130547 02-09

LITHIUM AND CHLORPROMAZINE: A CONTROLLED CROSSOVER STUDY OF HYPERACTIVE SEVERELY DISTURBED YOUNG CHILDREN. 131003 02-11

LITHIUM TREATMENT OF PSYCHOTIC CHILDREN AND ADOLESCENTS: A CONTROLLED CLINICAL TRIAL. 132189 02-09

SPECIFICITY OF THE EFFECT OF LITHIUM INJECTIONS ON THE ENTRY OF CARBON ATOMS OF GLUCOSE INTO MOUSE BRAIN IN VIVO. 132777 02-03

LITHIUM IN MANIA: CLINICAL TRIALS AND CONTROLLED STUDIES. (UNPUBLISHED PAPER) 132972 02-09

LITHIUM IN TREATMENT AND PREVENTION OF AFFECTIVE DISORDERS. 133094 02-09

THE PHARMACOKINETICS OF LITHIUM SALTS IN ACUTE STRAIN TESTS IN HEALTHY SUBJECTS. 133356 02-13

DISSOCIATION OF VERTICAL AND HORIZONTAL COMPONENTS OF ACTIVITY IN RATS TREATED WITH LITHIUM CHLORIDE. 133521 02-04

THE USE OF LITHIUM CARBONATE. 133625 02-13

LITHIUM, WEIGHT GAIN, AND SERUM INSULIN IN MANIC-DEPRESSIVE PATIENTS. 134310 02-15

THE RELATIONSHIP OF LITHIUM CARBONATE TO PSORIASIS. 134327 02-05

## LIVIDO-RETICULARIS

LIVIDO-RETICULARIS IN PARKINSONS DISEASE PATIENTS TREATED WITH AMANTADINE HYDROCHLORIDE. 119028 02-15

## LIVER

DIAZEPAM SEDATION FOR LIVER BIOPSY. 118965 02-07

EFFECT OF PRETREATMENT WITH SPIRONOLACTONE, PHENOBARBITAL OR BETA-DIETHYLAMINOETHYL DIPHENYLPROPYL-ACETATE (SKF-525-A) ON TRITIUM LEVELS IN BLOOD, HEART AND LIVER OF RATS AT VARIOUS TIMES AFTER ADMINISTRATION OF 3H-DIGITOXIN. 121243 02-03

PHENOBARBITAL MEDIATED INCREASE IN RING AND N-HYDROXYLATION OF THE CARCINOGEN N-2-FLUORENYLACETAMIDE, AND DECREASE IN AMOUNTS BOUND TO LIVER DEOXYRIBONUCLEIC ACID. 121265 02-03

DECREASE OF RIBONUCLEASE ACTIVITY OF ISOLATED RAT LIVER CYTOPLASMIC RIBOSOMES AFTER THE PHENOBARBITAL ADMINISTRATION. 121326 02-03

MIXED FUNCTION OXIDASE AND ETHANOL METABOLISM IN PERFUSED RAT LIVER. 121546 02-03

EFFECT OF CARBARYL (1-NAPHTHYL-N-METHYLCARBAMATE) ON PENTOBARBITAL INDUCED SLEEPING TIME AND SOME LIVER MICROSOMAL ENZYMES IN WHITE LEGHORN COCKERELS. 121836 02-03

INHIBITION OF DOPA DECARBOXYLATION BY R04-4602, MK-485 AND MK-486 IN HUMAN LIVER HOMOGENATES. 122081 02-03

THE EFFECT OF ALTERING LIVER MICROSOMAL CO-BINDING HEMOPROTEIN COMPOSITION ON PENTOBARBITAL INDUCED ANESTHESIA. 122096 02-03

SPECTRAL INTERACTIONS OF MARIJUANA CONSTITUENTS (LANNABINOID) WITH RAT LIVER MICROSOMAL MONOOXYGENASE SYSTEM. 122097 02-03

PROLONGED METABOLISM OF PENTOBARBITAL IN ISOLATED PERFUSED LIVER OF TUMOR BEARING RATS. 122167 02-03

METABOLISM OF DICOUAMAROL BY LIVER MICROSOMES FROM UNTREATED AND PHENOBARBITAL TREATED RATS. 122169 02-03

EFFECT OF MATERNALLY INJECTED SODIUM PENTOBARBITAL DURING THE EMBRYONIC PERIOD OF GESTATION ON LIVER GLYCOGEN LEVELS IN THE RAT FETUS. 122236 02-03

## Subject Index

## Psychopharmacology Abstracts

- ENHANCED ACTIVITY OF BENZPYRENE HYDROXYLASE IN RAT LIVER AND LUNG AFTER ACUTE CANNABIS ADMINISTRATION.** 122244 02-03
- INHIBITORY EFFECTS OF CHRONIC ADMINISTRATION OF MORPHINE ON URIDINE AND THYMIDINE INCORPORATING ABILITIES OF MOUSE LIVER AND BRAIN SUBCELLULAR FRACTIONS.** 122245 02-03
- OXIDATION AND GLUCURONIDATION OF CERTAIN DRUGS IN VARIOUS SUBCELLULAR FRACTIONS OF RAT LIVER: BINDING OF DESMETHYLIMIPRAMINE AND HEXOBARBITAL TO CYTOCHROME-P-450 AND OXIDATION AND GLUCURONIDATION OF DESMETHYLIMIPRAMINE, AMINOPYRINE, P-NITROPHENOL AND 1-NAPHTHOL.** 124120 02-03
- ON THE ADMINISTRATION OF PSYCHOTROPIC DRUGS AND ITS SIDE-EFFECTS DETECTED BY LIVER FUNCTION TEST.** 128952 02-08
- LOCAL**
- CYCLIZATION OF THREE N-OMEGA-HALOALKYL-N-METHYLAMINOACETOXYLIDIDE DERIVATIVES IN RELATION TO THEIR LOCAL ANESTHETIC EFFECT IN VITRO AND IN VIVO.** 122182 02-03
- LOCAL SYNTHESIS AND BREAKDOWN OF NORADRENALINE IN CONSTRICTED RAT SCIATIC NERVES.** 122574 02-03
- THE EFFECT OF EXPERIMENTAL LOCAL INFLAMMATION ON THE ACTION OF BARBITURATES IN RAT.** 133126 02-03
- ADRENERGIC NEURON BLOCKADE BY CLONIDINE: COMPARISON WITH GUANETHIDINE AND LOCAL ANESTHETICS.** 133132 02-03
- LOCALIZATION**
- METHAMPHETAMINE, FENFLURAMINE AND THEIR METABOLITES: IDENTIFICATION AND SUBCELLULAR LOCALIZATION IN RAT BRAIN HOMOGENATES. (UNPUBLISHED PAPER).** 126248 02-01
- INTRACELLULAR LOCALIZATION AND CO-FACTOR REQUIREMENT OF AMPHETAMINE TETRAZOLIUM REDUCTASE OF GUINEA-PIG BRAIN.** 133763 02-03
- LOCOMOTOR**
- ON THE INVOLVEMENT OF THE CAUDATE-PUTAMEN, GLOBUS-PALLIDUS AND SUBSTANTIA-NIGRA WITH NEUROLEPTIC AND CHOLINERGIC MODIFICATION OF LOCOMOTOR ACTIVITY.** 121274 02-03
- THE EFFECT OF BETA-PHENETHYLAMINE UPON SPONTANEOUS MOTOR ACTIVITY IN MICE: A DUAL EFFECT ON LOCOMOTOR ACTIVITY.** 121315 02-04
- THE EFFECT OF L-DOPA AND (-) AMPHETAMINE ON THE LOCOMOTOR ACTIVITY AFTER PIMOZIDE AND PHENOXYBENZAMINE.** 121317 02-04
- LOCOMOTOR ACTIVITY INCREASES PRODUCED BY INTRAHIPPOCAMPAL AND INTRASEPTAL ATROPINE IN RATS.** 122391 02-04
- LONG-ACTING**
- LONG-ACTING NEUROLEPTICS AND OTHER PSYCHOACTIVE DRUGS OF THE FUTURE.** 119024 02-17
- FLUSPIRILENE AND PIPOTHIAZINE UNDECYLENATE, TWO LONG-ACTING INJECTABLE NEUROLEPTICS: A DOUBLE-BLIND CONTROLLED TRIAL IN RESIDUAL SCHIZOPHRENIA.** 121544 02-08
- THE ANORECTIC EFFECT OF A LONG-ACTING PREPARATION OF PHENTERMINE (DUROMINE).** 133472 02-11
- LONG-LASTING**
- FLUSPIRILENE, AN INJECTABLE, AND PENFLURIDOL, AN ORAL LONG-LASTING, NEUROLEPTIC.** 134309 02-08
- LONG-TERM**
- EVALUATING THE LONG-TERM NEED FOR ANTIPARKINSON DRUGS BY CHRONIC SCHIZOPHRENICS.** 120699 02-08
- CONTROL OF BEHAVIORAL SYMPTOMS IN PATIENTS WITH LONG-TERM ILLNESS.** 120730 02-14
- CONTRIBUTION TO LONG-TERM THERAPY FOR SCHIZOPHRENIC PSYCHOSES WITH RETARD NEUROLEPTICS.** 121602 02-08
- MAINTENANCE PSYCHOTROPIC DRUGS IN THE PRESENCE OF ACTIVE TREATMENT PROGRAMS: A TRIPLE-BLIND WITHDRAWAL STUDY WITH LONG-TERM MENTAL PATIENTS.** 122705 02-11
- CLINICAL PSYCHOPHARMACOLOGICAL ASSESSMENT AND LONG-TERM OBSERVATION USING ELECTRONIC DATA PROCESSING.** 133482 02-17
- LONGITUDINAL**
- CATECHOLAMINE METABOLISM IN AFFECTIVE DISORDERS: A LONGITUDINAL STUDY OF A PATIENT TREATED WITH AMITRIPTYLINE AND ECT.** 130109 02-09
- LORAZEPAM**
- BRAIN CONCENTRATIONS OF LORAZEPAM AND OXAZEPAM AT EQUAL DEGREE OF ANTICONVULSANT ACTIVITY.** 119302 02-03
- THE EFFECT OF LORAZEPAM ON SLEEP.** 121986 02-07
- LOSS**
- UPTAKE AND LOSS OF 14C-DOPAMINE BY PLATELETS FROM CHILDREN WITH INFANTILE AUTISM.** 119968 02-11
- LOW-DOSE**
- THE EFFECTS OF LOW-DOSE COMBINATIONS OF D-AMPHETAMINE AND COCAINE ON EXPERIMENTALLY INDUCED CONFLICT IN THE RAT.** 119173 02-04
- LOWERING**
- SPECIES DIFFERENCE IN THE LOWERING OF BRAIN 5-HYDROXYTRYPTAMINE BY M-CHLOROAMPHETAMINE.** 119306 02-03
- DRUG DISPOSITION AS A FACTOR IN THE LOWERING OF BRAIN SEROTONIN BY CHLOROAMPHETAMINES IN THE RAT.** 121204 02-03
- LSD**
- LSD: PERSONALITY AND EXPERIENCE.** 120479 02-12
- LSD TERATOGENICITY AND CYTOGENETICS.** 121212 02-15
- DEPERSONALIZATION AND THE USE OF LSD: A PSYCHODYNAMIC STUDY.** 121726 02-12
- SUPPRESSION OF LYSERGIC ACID DIETHYLAMIDE (LSD) EFFECTS IN PREGNANT RATS.** 124174 02-03
- LSD PSYCHOTHERAPY: A REVIEW OF THE LITERATURE AND SOME PROPOSALS FOR FUTURE RESEARCH.** 133576 02-12
- EFFECT OF BOL ON THE LSD INDUCED ALTERATION OF FLICKER DISCRIMINATION.** 133655 02-04
- LSD-25**
- REVERSAL LEARNING FACILITATED BY A SINGLE INJECTION OF LYSERGIC ACID DIETHYLAMIDE (LSD-25) IN THE RAT.** 121303 02-04
- THE VARIABLE EFFECTS OF LSD-25 ON THE BEHAVIOR OF A HETEROGENEOUS GROUP OF CHILDHOOD SCHIZOPHRENICS.** 121403 02-12
- HISTOENZYMOLOGIC STUDIES OF THE BRAIN TISSUES AND INTERNAL ORGANS OF EXPERIMENTAL ANIMALS IN A SINGULAR ADMINISTRATION OF LSD-25.** 133505 02-03
- LUNG**
- ENHANCED ACTIVITY OF BENZPYRENE HYDROXYLASE IN RAT LIVER AND LUNG AFTER ACUTE CANNABIS ADMINISTRATION.** 122244 02-03
- LYSERGIC**
- REVERSAL LEARNING FACILITATED BY A SINGLE INJECTION OF LYSERGIC ACID DIETHYLAMIDE (LSD-25) IN THE RAT.** 121303 02-04
- SOME CLINICAL AND SOCIAL ASPECTS OF LYSERGIC ACID DIETHYLAMIDE: PART I.** 121932 02-12
- SUPPRESSION OF LYSERGIC ACID DIETHYLAMIDE (LSD) EFFECTS IN PREGNANT RATS.** 124174 02-03
- ACETYLCHOLINE LEVEL IN BRAIN STRUCTURES OF RATS FOLLOWING ADMINISTRATION OF LYSERGIC ACID DIETHYLAMIDE.** 125256 02-03
- ACTIVE TRANSPORT OF LYSERGIC ACID DIETHYLAMIDE.** 125674 02-03
- INTERACTION OF THE EFFECT OF LYSERGIC ACID DIETHYLAMIDE AND AMINAZINE AT THE LEVEL OF INDIVIDUAL NEURONS OF THE MIDBRAIN RETICULAR FORMATION.** 134457 02-03
- LYSINE**
- DISSOCIATION OF THE BEHAVIOURAL AND ENDOCRINE EFFECTS OF LYSINE VASOPRESSIN BY TRYPTIC DIGESTION.** 133753 02-04
- M-CHLOROAMPHETAMINE**
- SPECIES DIFFERENCE IN THE LOWERING OF BRAIN 5-HYDROXYTRYPTAMINE BY M-CHLOROAMPHETAMINE.** 119306 02-03
- MAGNESIUM**
- INCREASED CALCIUM AND MAGNESIUM EXCRETION INDUCED BY LITHIUM CARBONATE.** 119983 02-03

- MAGNESIUM PEMOLINE: EFFECTS OF A BROAD RANGE OF DOSES ON WATER MAZE PERFORMANCE. 120018 02-04
- THE EFFECT OF CALCIUM AND MAGNESIUM IONS ON DRUG RECEPTOR INTERACTIONS. 122239 02-03
- DEPRESSION OF SPONTANEOUS ACTIVITY IN GOLDFISH BY MAGNESIUM PEMOLINE. 122957 02-04
- MAINTENANCE**
- MAINTENANCE PSYCHOTROPIC DRUGS IN THE PRESENCE OF ACTIVE TREATMENT PROGRAMS: A TRIPLE-BLIND WITHDRAWAL STUDY WITH LONG-TERM MENTAL PATIENTS. 122705 02-11
1. SCHEDULE DEPENDENT EFFECTS; EFFECTS OF DRUGS, AND MAINTENANCE OF RESPONDING WITH RESPONSE PRODUCED ELECTRIC SHOCKS. 127213 02-04
- THE EFFECT OF TRANQUILIZATION UPON TERRITORY MAINTENANCE IN THE MALE RED-WINGED BLACKBIRD (*AGELAIUS-PHOENICEUS*). 129868 02-04
- MAJOR**
- FACTORS INFLUENCING RESPONSE TO MAJOR TRANQUILIZER MEDICATIONS. 123887 02-09
- EFFECT OF MINOR AND MAJOR TRANQUILIZERS ON SOMATOSENSORY EVOKED POTENTIALS. 124152 02-13
- MAJOR AND MINOR TRANQUILIZERS IN THE TREATMENT OF ANXIETY STATES. 133218 02-11
- MALE**
- EFFECTS OF MONOAMINE OXIDASE INHIBITORS ON THE COPULATORY BEHAVIOR OF MALE RATS. 120009 02-04
- INHIBITION BY ETHYLMORPHINE AND PENTOBARBITONE IN VITRO OF THE METABOLISM OF (UREYL-14C)TOLBUTAMIDE BY HEPATIC MICROSOMAL PREPARATIONS FROM MALE AND FEMALE RATS TREATED WITH PHENOBARBITONE. 121181 02-03
- THE EFFECTS OF P-CHLOROPHENYLALANINE ON THE MATING BEHAVIOR OF MALE RATS. 122036 02-04
- THE EFFECT OF TRANQUILIZATION UPON TERRITORY MAINTENANCE IN THE MALE RED-WINGED BLACKBIRD (*AGELAIUS-PHOENICEUS*). 129868 02-04
- MAMMALS**
- PASSAGE OF 3H-CHLORPROMAZINE AND 3H-DELTA9-TETRAHYDROCANNABINOL INTO THE HAIR (FUR) OF VARIOUS MAMMALS. 123033 02-03
- MAN**
- THE DENSITY AND ULTRASTRUCTURE OF THE PURKINJE CELLS FOLLOWING DIPHENYLHYDANTOIN TREATMENT IN ANIMALS AND MAN. 119002 02-03
- EFFECT OF MELANOCYTE STIMULATING HORMONE ON THE CORTICAL SOMATIC EVOKED RESPONSES IN MAN. 121280 02-13
- EFFECTS OF PERIPHERAL AROMATIC L-AMINO ACIDS DECARBOXYLASE INHIBITOR ON L-(2-14C)-3,4 DIHYDROXYPHENYLALANINE METABOLISM IN MAN. 121301 02-11
- MARIHUANA SMOKING: CARDIOVASCULAR EFFECTS IN MAN AND POSSIBLE MECHANISMS. 133055 02-13
- EFFECT OF STIMULATORY DRUGS ON THE SOMATOSENSORY EVOKED POTENTIAL IN MAN. 133348 02-13
- THE ACTION OF NEUROLEPTIC DRUGS ON THE MOTOR SYSTEM IN MAN. 133354 02-13
- INFLUENCE OF ALCOHOL INTAKE, LENGTH OF ABSTINENCE AND MEPROBAMATE ON THE RATE OF ETHANOL METABOLISM IN MAN. 133599 02-11
- EFFECTS OF CHRONIC PRAZEPAM ADMINISTRATION ON DRUG METABOLISM IN MAN AND RAT. 133685 02-13
- MANAGEMENT**
- MANAGEMENT OF DEPRESSION. 121255 02-17
- OXAZEPAM IN THE TREATMENT OF NEUROTIC DISTURBANCES AS WELL AS IN THE WITHDRAWAL MANAGEMENT OF ALCOHOLICS AND DRUG ADDICTS. 121600 02-10
- AMOTIVATIONAL SYNDROME: THE REAL MANAGEMENT PROBLEM OF SCHIZOPHRENIA. 121902 02-08
- PREVENTION AND MANAGEMENT OF TARDIVE DYSKINESIA. 127389 02-11
- MANDRAX**
- MANDRAX: CLINICAL, PHARMACOLOGICAL AND TOXICOLOGICAL ASPECTS: STUDY OF 106 OBSERVATIONS. 132903 02-07
- MANIA**
- METHYSERGIDE IN MANIA: A DOUBLE-BLIND COMPARISON WITH THIORIDAZINE. 121335 02-09
- MANIA AS A MESSAGE: TREATMENT WITH FAMILY THERAPY AND LITHIUM CARBONATE. 130388 02-09
- PSYCHIATRIC AND BIOCHEMICAL PROFILES OF LITHIUM THERAPY IN MANIA. (CASE REPORT). 130547 02-09
- LITHIUM IN MANIA: CLINICAL TRIALS AND CONTROLLED STUDIES. (UNPUBLISHED PAPER) 132972 02-09
- MANIC**
- CEREBRAL AND PERIPHERAL UTILIZATION OF L-DOPA IN PATIENTS WITH PARKINSONISM, DEPRESSIVE OR MANIC SYNDROMES UNDER L-DOPA PERFUSION WITH OR WITHOUT A DECARBOXYLASE INHIBITOR. 133175 02-13
- MANIC-DEPRESSIVE**
- PROPHYLACTIC TREATMENT OF MANIC-DEPRESSIVE PSYCHOSIS BY LITHIUM CARBONATE: THEORETICAL AND PRACTICAL CONCERN OF VARIATIONS IN PLASMA CONCENTRATION. 122316 02-13
- THE SWITCH PROCESS IN MANIC-DEPRESSIVE ILLNESS. II. RELATIONSHIP TO CATECHOLAMINES, REM SLEEP, AND DRUGS. 122980 02-09
- COMMENTS ON TREATMENT: LITHIUM CARBONATE IN MANIC-DEPRESSIVE ILLNESS. 123351 02-09
- FIELD DEPENDENCE IN MANIC-DEPRESSIVE PATIENTS. 125967 02-09
- BIOCHEMICAL AND PHARMACOLOGICAL VARIATIONS IN MANIC-DEPRESSIVE ILLNESS. 126500 02-09
- PSYCHOBIOLOGICAL AND PHARMACOLOGICAL STUDIES OF MANIC-DEPRESSIVE ILLNESS. 127217 02-09
- LITHIUM, WEIGHT GAIN, AND SERUM INSULIN IN MANIC-DEPRESSIVE PATIENTS. 134310 02-15
- MANIC-DEPRESSIVES**
- LITHIUM THERAPY FOR MANIC-DEPRESSIVES IN A LARGE, POOR, SPARSELY POPULATED CATCHMENT AREA. 119045 02-09
- MANIFESTATIONS**
- A TYPICAL MANIFESTATIONS OF POSTURAL HYPOTENSION. 122728 02-15
- NEUROPSYCHIATRIC MANIFESTATIONS OF KETAMINE HYDROCHLORIDE. 122738 02-14
- THE EFFECT OF DIPHENYLHYDANTOIN ON THE CLINICAL MANIFESTATIONS AND EXCRETION OF 5-HYDROXYINDOLEACETIC ACID IN PARKINSON'S DISEASE. 132808 02-11
- MAO**
- IDIOPATHIC ORTHOSTATIC HYPOTENSION TREATED WITH LEVODOPA AND MAO INHIBITOR: A PRELIMINARY REPORT. 122102 02-13
- MARIHUANA**
- EFFECTS OF PROPRANOLOL ON MARIHUANA INDUCED COGNITIVE DYSFUNCTIONING. 119034 02-14
- STIMULUS CHARACTERISTICS OF MARIHUANA COMPONENTS. 120831 02-03
- SPECTRAL INTERACTIONS OF MARIHUANA CONSTITUENTS (CANNABINOIDS) WITH RAT LIVER MICROSOMAL MONOOXYGENASE SYSTEM. 122097 02-03
- ALCOHOL AND MARIHUANA: A COMPARISON OF EFFECTS ON A TEMPORALLY CONTROLLED OPERANT IN HUMANS. 122178 02-14
- MARIHUANA AND TIDAL VOLUME. 122740 02-13
- MARIHUANA: ACUTE, CUMULATIVE, AND THERAPEUTIC EFFECTS. (UNPUBLISHED PAPER). 127418 02-13
- INHALATION INDUCED TOLERANCE AND PHYSICAL DEPENDENCE: THE HAZARD OF OPIATE SUFFUSED MARIHUANA. 127693 02-03
- MARIHUANA AND ALCOHOL: TIME PRODUCTION AND MEMORY FUNCTIONS. 129830 02-14
- CONTINGENT NEGATIVE VARIATION AMPLITUDES: MARIHUANA AND ALCOHOL. 129831 02-14



# Subject Index

# Psychopharmacology Abstracts

- LEARNED BEHAVIORAL TOLERANCE TO MARIJUANA IN RATS. 131281 02-04
- MARIJUANA SMOKING: CARDIOVASCULAR EFFECTS IN MAN AND POSSIBLE MECHANISMS. 133055 02-13
- AGGRESSIVE BEHAVIOUR INDUCED BY MARIJUANA COMPOUNDS AND AMPHETAMINE IN RATS PREVIOUSLY MADE DEPENDENT ON MORPHINE. 133522 02-04
- MARIJUANA AND SHOCK INDUCED AGGRESSION IN RATS. 133770 02-04
- MARIJUANA**
- ORAL AND PARENTERAL FORMULATIONS OF MARIJUANA CONSTITUENTS. 121284 02-06
- DRUG IDENTIFICATION, PROPERTIES AND CHARACTERISTICS: NARCOTICS, STIMULANTS, DEPRESSANTS, MARIJUANA AND HALLUCINOGENS. 122148 02-03
- COMPARISON OF BEHAVIORAL EFFECTS OF SYNTHETIC (-)-DELTA9-TRANS-TETRAHYDROCANNABINOL AND MARIJUANA EXTRACT DISTILLATE IN CHIMPANZEES. 122398 02-04
- THE EFFECTS OF A MARIJUANA EXTRACT ON TWO-CHOICE DISCRIMINATION LEARNING IN THE SQUIRREL MONKEY. 131445 02-04
- MIRTH AND MARIJUANA: PRELIMINARY FINDINGS. (UNPUBLISHED PAPER). 132366 02-15
- MARIJUANA EFFECTS ON NEURONS IN TISSUE CULTURE. 133943 02-03
- MASKED**
- MASKED DEPRESSION IN INTERNAL MEDICINE - THE FREQUENCY AND CLINICAL CHARACTERISTICS. 125862 02-09
- MASKED DEPRESSION IN OBSTETRICS AND GYNECOLOGY. 125864 02-09
- MASKED DEPRESSION IN VARIOUS FIELDS IN CLINICAL MEDICINE - FROM THE STANDPOINT IN INTERNAL MEDICINE ESPECIALLY IN THE FIELDS OF TREATMENT. 125999 02-09
- THE EFFECT OF THE AMITRIPTYLINE ON THE MASKED DEPRESSION - COMPARATIVE DOUBLE-BLIND CONTROLLED STUDY. 129737 02-09
- MATCHING**
- SOME EFFECTS OF (-) DELTA9-TRANS-TETRAHYDROCANNABINOL ON DELAYED MATCHING TO SAMPLE PERFORMANCE IN CHIMPANZEES. (UNPUBLISHED PAPER). 126242 02-04
- MATCHING-TO-SAMPLE**
- TOLERANCE TO DELTA9-THC UNDER DELAYED MATCHING-TO-SAMPLE TASKS IN CHIMPANZEES: EFFECTS OF DELAY LENGTH. 131450 02-04
- MATERNALLY**
- EFFECT OF MATERNALLY INJECTED SODIUM PENTOBARBITAL DURING THE EMBRYONIC PERIOD OF GESTATION ON LIVER GLYCOGEN LEVELS IN THE RAT FETUS. 122236 02-03
- MATING**
- THE EFFECTS OF P-CHLOROPHENYLALANINE ON THE MATING BEHAVIOR OF MALE RATS. 122036 02-04
- MAZE**
- MAGNESIUM PEMOLINE: EFFECTS OF A BROAD RANGE OF DOSES ON WATER MAZE PERFORMANCE. 120018 02-04
- PROACTIVE EFFECT OF ACTINOMYCIN D ON MAZE PERFORMANCE IN THE RAT. 122058 02-04
- DELTA9-TETRAHYDROCANNABINOL USED AS DISCRIMINATIVE STIMULUS FOR RATS IN POSITION LEARNING IN A T-SHAPED WATER MAZE. 133547 02-04
- MBD**
- MBD TREATMENT EVALUATED. 120839 02-11
- MEASURE**
- THE USE OF A SIMPLE TEST OF ATTENTION AS A MEASURE OF DRUG EFFECTS IN SCHIZOPHRENIC PATIENTS. 120085 02-08
- MEASURED**
- EFFECT OF SALICYLATE ON AUDITORY DETECTION THRESHOLDS MEASURED BY CONDITIONED AVOIDANCE RESPONSES, SENSORY IMPAIRMENT OR MOTIVATION DECREMENT 132543 02-03
- MEASUREMENT**
- MEASUREMENT OF PHASIC INTEGRATED POTENTIALS (PIP) DURING TREATMENT WITH P-CHLOROPHENYLALANINE (PCPA). 119394 02-13

- MEASURES**
- THE STABILITY AND SENSITIVITY OF MEASURES OF THOUGHT, PERCEPTION AND EMOTIONAL AROUSAL. 120118 02-08
- THE EFFECTS OF DRUGS ON OBJECTIVE MEASURES OF THOUGHT DISORDER IN SCHIZOPHRENIC PATIENTS. 120120 02-08
- MEBUTAMATE**
- A CLINICAL EVALUATION OF THE HYPNOTIC EFFICACY AND SAFETY OF MEBUTAMATE. 128341 02-11
- MECHANISM**
- L-DOPA IN PARKINSONISM: A POSSIBLE MECHANISM OF ACTION. 119030 02-03
- STUDIES ON THE MECHANISM OF AMPHETAMINE INDUCED LIPOLYSIS IN THE RAT. 119031 02-03
- THE MECHANISM OF EXCITABILITY BLOCKADE BY CHLORPROMAZINE. 119162 02-03
- RELEASE OF BRAIN DOPAMINE AS THE PROBABLE MECHANISM FOR THE HYPOTHERMIC EFFECT OF D-AMPHETAMINE. 128353 02-03
- GASTRIC LESIONS INDUCED BY RESTRAINT AND COLD EXPOSURE: A STUDY OF CENTRAL MONOAMINERGIC MECHANISM. (UNPUBLISHED PAPER). 132367 02-03
- A POSSIBLE CAUDATE CHOLINERGIC MECHANISM IN TWO INSTRUMENTAL CONDITIONED RESPONSES. 133471 02-04
- EXPERIMENTAL STUDIES ON THE MECHANISM OF RESERPINE ACTION. 133959 02-03
- MECHANISMS**
- MECHANISMS FOR THE EFFLUX OF 14C-DOPA AND 14C-DOPAMINE FROM THE CSF OF RHESUS MONKEYS. 118853 02-03
- CENTRAL NERVOUS SYSTEM MECHANISMS RESPONSIBLE FOR BLOOD PRESSURE ELEVATION INDUCED BY P-CHLOROPHENYLALANINE. 119161 02-03
- A STRATEGY FOR THE STUDY OF BEHAVIORAL MECHANISMS OF ANTIPSYCHOTIC DRUG ACTION IN SCHIZOPHRENIA. 120122 02-08
- EFFECTS OF HALOPERIDOL AND CHLORPROMAZINE ON CENTRAL ADRENERGIC AND CHOLINERGIC MECHANISMS IN RABBITS. 122026 02-04
- SEROTONERGIC MECHANISMS IN PARKINSONS DISEASE. 122255 02-14
- GASTRIC LESIONS INDUCED BY RESTRAINT AND COLD EXPOSURE: ARE CENTRAL ADRENERGIC MECHANISMS INVOLVED. (UNPUBLISHED PAPER). 129461 02-03
- MARIJUANA SMOKING: CARDIOVASCULAR EFFECTS IN MAN AND POSSIBLE MECHANISMS. 133055 02-13
- MEDIATED**
- PHENOBARBITAL MEDIATED INCREASE IN RING AND N-HYDROXYLATION OF THE CARCINOGEN N-2-FLUORENYLACETAMIDE, AND DECREASE IN AMOUNTS BOUND TO LIVER DEOXYRIBONUCLEIC ACID. 121265 02-03
- AMPHETAMINE PSYCHOSIS: A MODEL SCHIZOPHRENIA MEDIATED BY CATECHOLAMINES. 134118 02-15
- MEDIATORS**
- CATECHOLAMINES IN THE BRAIN AS MEDIATORS OF AMPHETAMINE PSYCHOSIS. 122659 02-13
- MEDICAL**
- MEDICAL CARE OF PSYCHOTROPIC DRUG PROBLEM PATIENTS OUTSIDE HOSPITAL. 125278 02-17
- MEDICAL ASPECTS OF ECT. 129383 02-17
- MEDICATION**
- THE CHANGE OF BEHAVIOR PATTERN OF ALCOHOL ADDICTS TREATED WITH CYANAMIDE DOUBLE MEDICATION - OBSERVATIONS BY THEIR FAMILIES. 129088 02-11
- PSYCHOACTIVE MEDICATION AND CONCERN: THE URBAN PHYSICIANS PRACTICAL RX FOR NEUROSES. 131345 02-10
- THE EFFECT OF AMITRIPTYLINE MEDICATION ON DEPRESSED DIABETIC PATIENTS. 131814 02-13
- MEDICATIONS**
- FACTORS INFLUENCING RESPONSE TO MAJOR TRANQUILIZER MEDICATIONS. 123887 02-09

## MEDICINE

MASKED DEPRESSION IN INTERNAL MEDICINE - THE FREQUENCY AND CLINICAL CHARACTERISTICS.

125862 02-09

EDUCATION OF THE PSYCHOSOMATIC MEDICINE.

125863 02-17

MASKED DEPRESSION IN VARIOUS FIELDS IN CLINICAL MEDICINE - FROM THE STANDPOINT IN INTERNAL MEDICINE ESPECIALLY IN THE FIELDS OF TREATMENT.

125999 02-09

## MELANOCYTE

EFFECT OF MELANOCYTE STIMULATING HORMONE ON THE CORTICAL SOMATIC EVOKED RESPONSES IN MAN.

121280 02-13

## MELIPRAMINE

EFFECT OF MELIPRAMINE ON CARBOHYDRATE METABOLISM IN RABBIT BRAIN.

121877 02-03

EFFECT OF MELIPRAMINE ON CARBOHYDRATE AND MONOAMINE METABOLISM IN BRAIN OF RESERPINIZED RATS.

121878 02-03

EFFECT OF MELIPRAMINE ON THE SEROTONIN CONTENT IN THE BRAIN OF RESERPINIZED RATS.

133961 02-03

## MEMBRANES

EFFECTS OF CHLORPROMAZINE, TRIFLUOPERAZINE, PROMAZINE AND IMIPRAMINE ON THE PROPERTIES OF EXCITABLE MEMBRANES.

125258 02-03

## MEMORY

EFFECTS OF ACETOXYCYCLOHEXIMIDE ON APPETITIVE LEARNING AND MEMORY.

119442 02-04

RETROGRADE AMNESIA FOR DISCRIMINATED TASTE AVERSIONS: A MEMORY DEFICIT.

120556 02-04

THE CHOLINERGIC SYSTEM, AMNESIA AND MEMORY.

122390 02-04

MARIHUANA AND ALCOHOL: TIME PRODUCTION AND MEMORY FUNCTIONS.

129830 02-14

INTERACTION OF HOUSING CONDITIONS AND CYCLOHEXIMIDE ON MEMORY FORMATION.

131448 02-04

## MENTAL

THE PREVALENCE OF TARDIVE DYSKINESIAS IN MENTAL HOSPITAL PATIENTS.

120729 02-15

MAINTENANCE PSYCHOTROPIC DRUGS IN THE PRESENCE OF ACTIVE TREATMENT PROGRAMS: A TRIPLE-BLIND WITHDRAWAL STUDY WITH LONG-TERM MENTAL PATIENTS.

122705 02-11

RELATIONSHIP OF LITHIUM METABOLISM TO MENTAL HOSPITAL ADMISSION AND HOMICIDE.

130473 02-17

BEHAVIOR OF BIOPHYSICAL BLOOD PROPERTIES IN CHILDREN WITH MENTAL DISORDERS RECEIVING CHLORPROMAZINE TREATMENT.

133076 02-03

THE ELECTRIC INTERPHASIC BLOOD POTENTIAL FOR SODIUM AND POTASSIUM IONS IN PATIENTS TREATED WITH CHLORPROMAZINE FOR VARIOUS MENTAL DISORDERS.

133463 02-13

## MENTALLY

EXPERIMENTAL PSYCHOClinical TREATMENT OF THE SEVERELY MENTALLY RETARDED WITH ARGinine-N-ACETYL-ASPARTATE (AAA).

132772 02-11

## MEPERIDINE

THE EFFECTS OF MEPERIDINE AND MORPHINE IN RABBITS PRETREATED WITH PHENELZINE.

121179 02-05

## MEPIPAZOL

CLINICAL EFFECTS OF MEPIPAZOL ON HOSPITALIZED CHRONIC SCHIZOPHRENICS.

122199 02-07

## MEPROBAMATE

ANOREXIGENIC ACTIVITY OF INTERMITTENT DEXTROAMPHETAMINE WITH AND WITHOUT MEPROBAMATE.

119169 02-13

INFLUENCE OF ALCOHOL INTAKE, LENGTH OF ABSTINENCE AND MEPROBAMATE ON THE RATE OF ETHANOL METABOLISM IN MAN.

133599 02-11

## MER-25

DIFFERENTIAL ANTAGONISM, BY MER-25, OF BEHAVIORAL AND MORPHOLOGICAL EFFECTS OF ESTRADIOL BENZOATE IN RATS.

133714 02-04

## MESCALINE

PEYOTE AND RELATED ALKALOIDS XIV: MESCALOXYLIC ACID AND MESCALORUVIC ACID, THE NOVEL AMINO ACID ANALOGS OF MESCALINE.

121285 02-01

## MESCALORUVIC

PEYOTE AND RELATED ALKALOIDS XIV: MESCALOXYLIC ACID AND MESCALORUVIC ACID, THE NOVEL AMINO ACID ANALOGS OF MESCALINE.

121285 02-01

## MESCALOXYLIC

PEYOTE AND RELATED ALKALOIDS XIV: MESCALOXYLIC ACID AND MESCALORUVIC ACID, THE NOVEL AMINO ACID ANALOGS OF MESCALINE.

121285 02-01

## MESORIDAZINE

TWO STUDIES OF THE EFFECTS OF MESORIDAZINE.

121984 02-08

A CLINICAL STUDY OF MESORIDAZINE AND CHLORPROMAZINE IN RELAPSED SCHIZOPHRENIC PATIENTS.

130474 02-08

## MESSAGE

MANIA AS A MESSAGE: TREATMENT WITH FAMILY THERAPY AND LITHIUM CARBONATE.

130388 02-09

## METABOLIC

METABOLIC AND PHARMACOLOGIC INTERACTION OF ETHANOL AND METRONIDAZOLE IN THE RAT.

119000 02-03

THE METABOLISM OF ETHANOL AND ITS METABOLIC EFFECTS.

120925 02-13

BEHAVIORAL AND METABOLIC EFFECTS OF L-TRYPTOPHAN IN UNIPOLAR DEPRESSED PATIENTS. (UNPUBLISHED PAPER)

132989 02-09

RELATIONSHIP BETWEEN HYPOTHERMIA AND SOME CHLORPROMAZINE INDUCED METABOLIC CHANGES IN MOUSE BRAIN.

133526 02-03

A METABOLIC INTERACTION IN VIVO BETWEEN CANNABIDIOL AND DELTA1-TETRAHYDROCANNABINOL.

133741 02-03

RUBIDIUM: BIOCHEMICAL, BEHAVIORAL, AND METABOLIC STUDIES IN HUMANS.

134111 02-09

## METABOLISM

INDOLE METABOLISM AND BEHAVIOR IN DOG.

118931 02-04

MORPHINE CATALEPSY IN THE RAT: RELATION TO STRIATAL DOPAMINE METABOLISM.

119032 02-03

INSOMNIA AND CEREBRAL METABOLISM OF SEROTONIN IN CAT: IN VITRO SYNTHESIS AND RELEASE OF SEROTONIN 18 H AFTER DESTRUCTION OF THE RAPHE NUCLEI.

119684 02-03

THE ROLE OF METABOLISM IN TEMPERATURE DEPENDENT SUPERSENSITIVITY OF GUINEA-PIG ATRIA TO SYMPATHOMIMETIC AMINES.

120235 02-03

ALTERED CARBOHYDRATE METABOLISM DURING TREATMENT WITH LITHIUM CARBONATE.

120754 02-13

PARTIAL ANTAGONISM OF THE BEHAVIOURAL AND NEUROCHEMICAL EFFECTS OF PHENCYCLIDINE BY DRUGS AFFECTING MONOAMINE METABOLISM.

120794 02-04

THE METABOLISM OF ETHANOL AND ITS METABOLIC EFFECTS.

120925 02-13

CATECHOLAMINE METABOLISM, DEPRESSIVE ILLNESS AND DRUG RESPONSE.

120992 02-13

ALTERED NOREPINEPHRINE METABOLISM FOLLOWING EXPERIMENTAL SPINAL CORD INJURY. PART 2: PROTECTION AGAINST TRAUMATIC SPINAL CORD HEMORRHAGIC NECROSIS BY NOREPINEPHRINE SYNTHESIS BLOCKADE WITH ALPHA-METHYL-TYROSINE.

121067 02-03

THE ACTION OF GAMMA-HYDROXYBUTYRIC ACID ON CEREBRAL GLUCOSE METABOLISM.

121074 02-02

INHIBITION BY ETHYLMORPHINE AND PENTOBARBITONE IN VITRO OF THE METABOLISM OF (UREYL-14C)TOLBUTAMIDE BY HEPATIC MICROSOMAL PREPARATIONS FROM MALE AND FEMALE RATS TREATED WITH PHENOBARBITONE.

121181 02-03

EFFECTS OF PERIPHERAL AROMATIC L-AMINO ACIDS DECARBOXYLASE INHIBITOR ON L-(2-14C)-3,4 DIHYDROXYPHENYLALANINE METABOLISM IN MAN.

121301 02-11

## Subject Index

## Psychopharmacology Abstracts

- SOME EFFECTS OF THE HALLUCINOGENIC DRUG 2,5 DIMETHOXY-4-METHYLAMPHETAMINE ON THE METABOLISM OF BIOGENIC AMINES IN THE RAT BRAIN. 121305 02-03
- MIXED FUNCTION OXIDASE AND ETHANOL METABOLISM IN PERFUSED RAT LIVER. 121546 02-03
- EFFECT OF AMINAZINE AND IMISINE ON METABOLISM OF DICARBOXYLIC AMINO ACIDS AND THEIR DERIVATIVES (GLUTAMINE AND GAMMA-AMINOBUTYRIC ACID) IN CAT BRAIN. 121876 02-03
- EFFECT OF MELIPRAMINE ON CARBOHYDRATE METABOLISM IN RABBIT BRAIN. 121877 02-03
- EFFECT OF MELIPRAMINE ON CARBOHYDRATE AND MONOAMINE METABOLISM IN BRAIN OF RESERPINIZED RATS. 121878 02-03
- THE EFFECT OF THE NEURONAL EXCITANT N-METHYL-D-ASPARTATE ON THE METABOLISM OF MOUSE BRAIN AMINO ACIDS LABELLED FROM (14C)BICARBONATE AND L-(U-14C)ASPARTATE. 122019 02-11
- ALTERED CALCIUM METABOLISM DUE TO ANTICONVULSANT DRUGS. 122166 02-13
- METABOLISM OF 3,4 DIHYDROXYPHENYLALANINE (L-DOPA) IN HUMAN SUBJECTS. 122167 02-03
- PROLONGED METABOLISM OF PENTOBARBITAL IN ISOLATED PERFUSED LIVER OF TUMOR BEARING RATS. 122169 02-03
- METABOLISM OF DICOUMAROL BY LIVER MICROSOMES FROM UNTREATED AND PHENOBARBITAL TREATED RATS. 122241 02-03
- ROUTE OF ADMINISTRATION AND DRUG METABOLISM. 122247 02-03
- EFFECT OF COLD EXPOSURE ON DRUG ACTION AND HEPATIC DRUG METABOLISM IN THE RAT. 123938 02-03
- ALTERED METABOLISM OF SEROTONIN IN THE BRAIN OF THE RAT AFTER CHRONIC INGESTION OF D-AMPHETAMINE. 126709 02-13
- IN VIVO METABOLISM OF CHLORPROMAZINE IN SCHIZOPHRENIC PATIENTS. 127215 02-09
- CATECHOLAMINE METABOLISM IN AFFECTIVE DISORDERS - IV. PRELIMINARY STUDIES OF NOREPINEPHRINE METABOLISM IN DEPRESSED PATIENTS TREATED WITH AMITRIPTYLINE. 130109 02-09
- CATECHOLAMINE METABOLISM IN AFFECTIVE DISORDERS: A LONGITUDINAL STUDY OF A PATIENT TREATED WITH AMITRIPTYLINE AND ECT. 130182 02-03
- CHLORPROMAZINE INDUCED ALTERATIONS OF CARBOHYDRATE METABOLISM: EFFECT OF CHLORPROMAZINE PRETREATMENT ON THE INSULIN RESPONSE TO GLUCOSE AND TOLBUTAMIDE IN THE ADRENALECTOMIZED RAT. (PH.D. DISSERTATION). 130473 02-17
- RELATIONSHIP OF LITHIUM METABOLISM TO MENTAL HOSPITAL ADMISSION AND HOMICIDE. 130761 02-03
- BEHAVIORAL CONTROL OF DRUG METABOLISM AND BODY TEMPERATURE: BIOCHEMICAL AND PHYSIOLOGICAL CORRELATES. (PH.D. DISSERTATION). 132893 02-03
- INHIBITION OF HEPATIC MICROSOMAL DRUG METABOLISM BY THE HYDRAZINES RO-4-4602, MK-486, AND PROCARBAZINE HYDROCHLORIDE. 133180 02-04
- SOME OBSERVATIONS ON THE BEHAVIOURAL EFFECTS OF HALLUCINOGENIC DRUGS ON RATS: POTENTIATION BY TWO DRUGS AFFECTING MONOAMINE METABOLISM. 133599 02-11
- INFLUENCE OF ALCOHOL INTAKE, LENGTH OF ABSTINENCE AND MEPROBAMATE ON THE RATE OF ETHANOL METABOLISM IN MAN. 133605 02-03
- ETHANOL METABOLISM IN VIVO AND THE ROLE OF HEPATIC MICROSOMAL ETHANOL OXIDATION. 133685 02-13
- EFFECTS OF CHRONIC PRAZEPAM ADMINISTRATION ON DRUG METABOLISM IN MAN AND RAT. 133718 02-13
- SPECIES DIFFERENCES IN THE METABOLISM OF A TRICYCLIC PSYCHOTROPIC AGENT, SQ-11290-14C. 121198 02-03
- METABOLITE**  
ACCUMULATION AND ELIMINATION OF A NOVEL METABOLITE DURING CHRONIC ADMINISTRATION OF THE PHENOTHIAZINE DRUG PERAZINE TO RATS. 133235 02-03
- A 3-O-METHYLATED CATECHOL METABOLITE OF DIPHENYLHYDANTOIN (DILANTIN) IN RAT URINE. 122235 02-03
- AN URINARY METABOLITE OF BROMAZEPAM. 133523 02-01
- METABOLITES**  
EFFECT OF FOUR AMPHETAMINES ON BRAIN BIOGENIC AMINES AND THEIR METABOLITES. 119057 02-03
- HYPOTHETICAL ROLE OF DEAMINATED METABOLITES OF NORADRENALINE IN PGO SPIKING AND PS. 119392 02-03
- THE RESPECTIVE INVOLVEMENT OF NORADRENALINE AND ITS DEAMINATED METABOLITES IN WAKING AND PARADOXICAL SLEEP: A NEUROPHARMACOLOGICAL MODEL. 119683 02-03
- STEADY-STATE LEVELS OF PROBENECID AND THEIR RELATION TO ACID MONOAMINE METABOLITES IN HUMAN CEREBROSPINAL FLUID. 119985 02-03
- DELTA9-TETRAHYDROCANNABINOL AND ITS METABOLITES IN MONKEY BRAINS. 121318 02-03
- EFFECT OF GAMMA-HYDROXYBUTYRATE ON DOPAMINE AND DOPAMINE METABOLITES IN THE RAT STRIATUM. 121522 02-03
- COMPARATIVE STUDY ON THE INHIBITION OF NA<sup>+</sup>, K<sup>+</sup> ACTIVATED ATPASE ACTIVITY BY CHLORPROMAZINE, PROMAZINE, IMIPRAMINE, AND THEIR MONODESMETHYL METABOLITES. 122091 02-03
- ISOLATION OF METABOLITES OF L-DOPA - A POSSIBLE SOURCE OF ERROR. 122165 02-03
- CALCIUM EFFLUX AND RESPIRATORY INHIBITION IN BRAIN MITOCHONDRIA: EFFECTS OF CHLORPROMAZINE METABOLITES. 122535 02-03
- THE EFFECTS OF ELECTROSHOCK THERAPY, LITHIUM AND TRICYCLIC ANTIDEPRESSANT TREATMENT ON PROBENECID INDUCED ACCUMULATIONS OF CSF AMINE METABOLITES IN DEPRESSED PATIENTS. (UNPUBLISHED PAPER). 125200 02-09
- METHAMPHETAMINE, FENFLURAMINE AND THEIR METABOLITES: IDENTIFICATION AND SUBCELLULAR LOCALIZATION IN RAT BRAIN HOMOGENATES. (UNPUBLISHED PAPER). 126248 02-01
- METABOLIZING**  
RELATION BETWEEN DRUG METABOLIZING ACTIVITY AND PHOSPHOLIPIDS IN HEPATIC MICROSOMES. I. EFFECTS OF PHENOBARBITAL, CARBON TETRACHLORIDE, AND ACTINOMYCIN-D. 119001 02-03
- BICUCULLINE AND GABA METABOLIZING ENZYMES. 120809 02-03
- METHADONE**  
METHADONE INDUCED PULMONARY EDEMA. 121218 02-15
- HYPOTHERMIA ASSOCIATED WITH METHADONE INTOXICATION. 121839 02-15
- EVIDENCE THAT METHADONE BLOCKS DOPAMINE RECEPTORS IN THE BRAIN. 122284 02-03
- SYRUP METHADONE CONSUMPTION BY RATS. 129619 02-04
- RELATIVE DEGREE OF TOLERANCE TO MORPHINE SULFATE AND METHADONE HYDROCHLORIDE IN THE RAT AND THE INTERACTION OF DEXAMETHASONE. 133293 02-04
- METHAMPHETAMINE**  
SELECTIVE INCREASE IN AVOIDANCE RESPONDING BY METHAMPHETAMINE IN NAIVE RATS. 120786 02-04
- EFFECTS OF METHAMPHETAMINE ON WELL-PRACTICED DISCRIMINATION CONDITIONING OF THE EYELID RESPONSE. 122397 02-14
- METHAMPHETAMINE, FENFLURAMINE AND THEIR METABOLITES: IDENTIFICATION AND SUBCELLULAR LOCALIZATION IN RAT BRAIN HOMOGENATES. (UNPUBLISHED PAPER). 126248 02-01
- EFFECT OF METHAMPHETAMINE ON WATER CONSUMPTION. 130856 02-05
- INTERGENERIC BEHAVIORAL DIFFERENCES AMONG METHAMPHETAMINE TREATED MICE. 133379 02-04
- METHIONINE**  
EXCRETION OF VANILLYL-MANDELIC ACID, HOMOVANILLIC ACID, N-METHYL-NICOTINAMIDE, AND N-METHYL-2-PYRIDONE-5-CARBOXAMIDE IN URINE OF VOLUNTARY TEST PERSONS AND PSYCHIATRIC PATIENTS BEFORE AND AFTER ADMINISTRATION OF METHIONINE. 133265 02-13

## METHOD

BROMINATION OF PHENOTHIAZINE TRANQUILIZERS: A METHOD FOR SENSITIVE AND SPECIFIC DETECTION.

119053 02-06

CLINICAL EVALUATION OF A NEW PSYCHOTROPIC DRUG; Y-4153 - COMPARATIVE STUDY WITH CHLORPROMAZINE USING A DOUBLE-BLIND METHOD.

120632 02-08

THE RESILIENCE OF FAMILY PROCESS: EFFECT OF SECOBARBITAL I. METHOD AND FINDINGS. (UNPUBLISHED PAPER).

134129 02-14

## METHODOLOGY

DEVELOPMENT OF METHODOLOGY FOR ASSAY OF CANNABINOIDS IN BODY FLUIDS AND TISSUES. (UNPUBLISHED PAPER).

132370 02-06

## METHODS

STUDIES ON BENZODIAZEPINES II: THE NEW SYNTHETIC METHODS OF 1,4 BENZODIAZEPINES.

130913 02-01

IN VITRO METHODS OF DETECTING DRUG HYPERSENSITIVITY.

132995 02-15

## METHOHEXITAL

ELECTROENCEPHALOGRAPHIC ACTIVATION WITH SLEEP AND METHOHEXITAL: COMPARATIVE USEFULNESS IN THE DIAGNOSIS OF EPILEPSY.

122253 02-14

METHOHEXITAL HYPNOSIS IN ELECTROENCEPHALOGRAPHY.

127876 02-13

## METHOXY

PROBLEMS IN IDENTIFICATION OF METHYLENEDIOXY AND METHOXY AMPHETAMINES.

125748 02-01

## METHYL

CENTRAL BLOCKADE OF (METHYL)ATROPINE ON CARBACHOL DRINKING: A DOSE-RESPONSE STUDY.

121380 02-04

EFFECTS OF PROPRANOLOL, PHENTOLAMINE AND METHYL ATROPINE ON CARDIOVASCULAR FUNCTION IN THE SQUIRREL MONKEY DURING BEHAVIORAL EXPERIMENTS.

122179 02-03

## METHYLAMINOETHANE

N-PHENYL-N-BENZYL-4-AMINO-1-METHYLPIPERIDIN HCL (BAMIPINE) COMBINED WITH 1-CYCLOHEXYL-1-METHYL 2 METHYLAMINOETHANE (CHP) FOR THE INTERIM AND TERMINAL TREATMENT OF DEPRESSIVE SYNDROMES.

122296 02-07

## METHYLATED

THE EFFECTS OF METHYLATED TRYPTAMINE DERIVATIVES ON BRAINSTEM NEURONES.

121307 02-12

## METHYLATION

EFFECT OF L-DIHYDROXYPHENYLALANINE ON METHYLATION OF 3H-NOREPINEPHRINE AND 3H-HISTAMINE.

122168 02-03

## METHYLDOPA

THE USE OF METHYLDOPA IN SCHIZOPHRENIA: A REVIEW AND COMPARATIVE STUDY.

120263 02-08

INVOLUNTARY MOVEMENT DISORDER CAUSED BY METHYLDOPA.

120853 02-13

TREATMENT OF TARDIVE DYSKINESIA: III. CLINICAL EFFICACY OF A DOPAMINE COMPETING AGENT, METHYLDOPA.

129833 02-13

## METHYLENEDIOXY

PROBLEMS IN IDENTIFICATION OF METHYLENEDIOXY AND METHOXY AMPHETAMINES.

125748 02-01

## METHYLENEDIOXYAMPHETAMINE

A FATAL CASE INVOLVING METHYLENEDIOXYAMPHETAMINE.

122440 02-15

## METHYLPHENIDATE

METHYLPHENIDATE IN MILDLY DEPRESSED OUTPATIENTS.

119035 02-10

METHYLPHENIDATE INDUCED INHIBITION OF EXPLORATORY BEHAVIOR IN RATS.

120219 02-04

PSYCHOSIS DURING METHYLPHENIDATE ABUSE.

121581 02-15

THE EFFECT OF METHYLPHENIDATE (RITALIN) ON SUSTAINED ATTENTION IN HYPERACTIVE CHILDREN.

122198 02-11

HYPERTENSIVE EPISODES AFTER ADDING METHYLPHENIDATE (RITALIN) TO TRICYCLIC ANTIDEPRESSANTS: (REPORT OF THREE CASES AND REVIEW OF CLINICAL ADVANTAGES).

131348 02-15

ALLERGIC REACTION TO METHYLPHENIDATE.

133804 02-15

EFFECTIVENESS OF DIAZEPAM AND METHYLPHENIDATE IN MULTIPLE DOSAGES IN MODIFYING INFANT TRAUMA EFFECTS.

134104 02-04

## METHYLSCOPOLAMINE

EFFECTS OF INTRAHIPPOCAMPAL INJECTIONS WITH METHYLSCOPOLAMINE AND NEOSTIGMINE UPON EXPLORATORY BEHAVIOUR IN TWO INBRED MOUSE STRAINS.

120789 02-04

## METHYSERGIDE

METHYSERGIDE IN MANIA: A DOUBLE-BLIND COMPARISON WITH THIORIDAZINE.

121335 02-09

PSYCHIATRIC ADVERSE REACTIONS TO METHYSERGIDE.

122358 02-15

COMPARISON OF CHLORDIAZEPOXIDE, METHYSERGIDE, AND CINANSERIN AS MODIFIERS OF PUNISHED BEHAVIOR AND AS ANTAGONISTS OF N,N DIMETHYLTRYPTAMINE.

132776 02-04

## METOCLOPRAMIDE

PASPERTIN (METOCLOPRAMIDE) AS A CAUSE OF DYSTONIC HYPERKINETIC SYNDROME IN CHILDREN.

132901 02-15

## METRAZOL

A CONTROLLED STUDY OF THE EFFICACY OF PENTYLENETETRAZOL (METRAZOL) WITH HARD-CORE HOSPITALIZED PSYCHOGERIATRIC PATIENTS.

127184 02-11

## METRONIDAZOLE

METABOLIC AND PHARMACOLOGIC INTERACTION OF ETHANOL AND METRONIDAZOLE IN THE RAT.

119000 02-03

## MEXICAN

PEYOTE ALKALOIDS: IDENTIFICATION IN THE MEXICAN CACTUS PELECYPHORA ASELLIFORMIS EHRENBURG.

132873 02-01

## MHPG

DEPRESSION AND MHPG EXCRETION.

120993 02-13

CEREBROSPINAL FLUID LEVELS OF MHPG IN AFFECTIVE DISORDERS.

124330 02-13

## MICE

EFFECTS OF CATECHOLAMINE SYNTHESIS INHIBITION ON ETHANOL NARCOSIS IN MICE.

118988 02-03

COMPARISON OF THE DOSE-RESPONSE EFFECTS OF MORPHINE ON BRAIN AMINES, ANALGESIA AND ACTIVITY IN MICE.

119037 02-03

DISPOSITION AND BEHAVIORAL EFFECTS OF AMPHETAMINE AND BETA,BETA DIFLUOROAMPHETAMINE IN MICE.

119058 02-04

EFFECT OF AMPHETAMINES ON TRYPTOPHAN CONCENTRATIONS IN MICE AND RATS.

119301 02-03

PREINJECTION TIME OF SCOPOLAMINE AND STEP-DOWN LATENCY IN MICE.

120097 02-04

RESERPINE INDUCED ALTERATIONS IN BRAIN AMINES AND THEIR RELATIONSHIP TO CHANGES IN THE INCIDENCE OF MINIMAL ELECTROSHOCK SEIZURES IN MICE.

120360 02-03

HYPERTHERMIA IN D-AMPHETAMINE TOXICITY IN AGGREGATED MICE OF DIFFERENT STRAINS.

120364 02-03

NEUROPHARMACOLOGICAL STUDY OF DELTA9-THC AND DELTA8-L-TETRAHYDROCANNABINOLS IN MONKEYS AND MICE.

120814 02-04

THE EFFECT OF BETA-PHENETHYLAMINE UPON SPONTANEOUS MOTOR ACTIVITY IN MICE: A DUAL EFFECT ON LOCOMOTOR ACTIVITY.

121315 02-04

BLOCKADE BY PIMOZIDE OF (-) AMPHETAMINE INDUCED HYPERKINESIA IN MICE.

121316 02-04

FAILURE OF AN OPIATE TO PROTECT MICE AGAINST NALOXONE PRECIPITATED WITHDRAWAL.

122184 02-04

PHENITRONE: INEFFECTIVE BLOCKADE OF (-) TRANS-DELTA9-TETRAHYDROCANNABINOL IN MICE AND DOGS.

122448 02-03

AN ANALYSIS OF DRUG EFFECTS IN MICE EXPOSED TO A SIMPLE NOVEL ENVIRONMENT.

124153 02-04

EFFECT OF ACTH ON THE SYNTHESIS OF RAPIDLY LABELLED RNA IN THE NERVOUS SYSTEM OF MICE.

132695 02-03

THE EFFECT OF ELANTRINE, A NEW ANTIPARKINSONISM AGENT, ON DRUG-INDUCED TREMOR IN MICE.

132778 02-11



## Subject Index

## Psychopharmacology Abstracts

- EFFECT OF FENFLURAMINE, CHLORPHENTERMINE AND RELATED COMPOUNDS ON THE BEHAVIOR OF AGGRESSIVE MICE. 133131 02-04
- AMPHETAMINE AGGREGATION EFFECT IN MICE UNDER CONDITIONS OF ALTERED MICROSOMAL ENZYMES. 133181 02-05
- APOMORPHINE INDUCED HYPOTHERMIA IN MICE; A POSSIBLE DOPAMINERGIC EFFECT. 133213 02-03
- INTERGENERIC BEHAVIORAL DIFFERENCES AMONG METHAMPHETAMINE TREATED MICE. 133379 02-04
- THE EFFECTS OF TRANLYCPROMINE AND CHLORPROMAZINE UPON THE SPONTANEOUS MOTOR ACTIVITY OF MICE. 133624 02-04
- MICROCIRCULATORY**  
MICROCIRCULATORY RESPONSES IN THE BAT WING TO GLUCAGON WITH AND WITHOUT BARBITURATE ANESTHESIA (36515). 121289 02-03
- MICROELECTROPHORETIC**  
THE MICROELECTROPHORETIC ADMINISTRATION OF NORADRENALINE, 5-HYDROXYTRYPTAMINE, ACETYLCHOLINE AND GLYCINE TO SACRAL PARASYMPATHETIC PREGANGLIONIC NEURONS. 132153 02-03
- MICROSOMAL**  
EFFECTS OF CHLORPROMAZINE FREE RADICAL ON BRAIN AND MICROSOMAL ENZYMES. 118913 02-03
- INHIBITION BY ETHYLMORPHINE AND PENTOBARBITONE IN VITRO OF THE METABOLISM OF (UREYL-14C)TOLBUTAMIDE BY HEPATIC MICROSOMAL PREPARATIONS FROM MALE AND FEMALE RATS TREATED WITH PHENOBARBITONE. 121181 02-03
- MICROSOMAL PENTOBARBITAL HYDROXYLASE ACTIVITY IN ACUTE VIRAL HEPATITIS. 121288 02-15
- BRAIN MICROSOMAL PROTEIN KINASE IN THE CHRONICALLY MORPHINIZED RAT. 121355 02-03
- EFFECT OF CARBARYL (1-NAPHTHYL-N-METHYLCARBAMATE) ON PENTOBARBITAL INDUCED SLEEPING TIME AND SOME LIVER MICROSOMAL ENZYMES IN WHITE LEGHORN COCKERELS. 121836 02-03
- THE EFFECT OF ALTERING LIVER MICROSOMAL CO-BINDING HEMOPROTEIN COMPOSITION ON PENTOBARBITAL INDUCED ANESTHESIA. 122096 02-03
- SPECTRAL INTERACTIONS OF MARIJUANA CONSTITUENTS (CANNABINOIDS) WITH RAT LIVER MICROSOMAL MONOOXYGENASE SYSTEM. 122097 02-03
- INHIBITION OF HEPATIC MICROSOMAL DRUG METABOLISM BY THE HYDRAZINES RO-4-4602, MK-486, AND PROCARBAZINE HYDROCHLORIDE. 132893 02-03
- AMPHETAMINE AGGREGATION EFFECT IN MICE UNDER CONDITIONS OF ALTERED MICROSOMAL ENZYMES. 133181 02-05
- ETHANOL METABOLISM IN VIVO AND THE ROLE OF HEPATIC MICROSOMAL ETHANOL OXIDATION. 133605 02-03
- MICROSOMES**  
RELATION BETWEEN DRUG METABOLIZING ACTIVITY AND PHOSPHOLIPIDS IN HEPATIC MICROSOMES. I. EFFECTS OF PHENOBARBITAL, CARBON TETRACHLORIDE, AND ACTINOMYCIN-D. 119001 02-03
- METABOLISM OF DICOUMAROL BY LIVER MICROSOMES FROM UNTREATED AND PHENOBARBITAL TREATED RATS. 122169 02-03
- MICROWAVE**  
CYCLIC-AMP IN BRAIN AREAS: EFFECTS OF AMPHETAMINE AND NOREPINEPHRINE ASSESSED THROUGH THE USE OF MICROWAVE RADIATION AS A MEANS OF TISSUE FIXATION. 133713 02-03
- MIDBRAIN**  
EFFECTS OF INTRAVENTRICULARLY INJECTED 6-HYDROXYDOPAMINE OR MIDBRAIN RAPHE LESION ON MORPHINE ANALGESIA IN RATS. 122396 02-03
- SYNAPTOSOMES FROM FOREBRAIN OF RATS WITH MIDBRAIN RAPHE LESIONS: SELECTIVE REDUCTION OF SEROTONIN UPTAKE. 124188 02-03
- INTERACTION OF THE EFFECT OF LYSERGIC ACID DIETHYLAMIDE AND AMINAZINE AT THE LEVEL OF INDIVIDUAL NEURONS OF THE MIDBRAIN RETICULAR FORMATION. 134457 02-03
- MIGRAINE**  
OBSERVATIONS ON THE RELATION OF MIGRAINE AND EPILEPSY: AN ELECTROENCEPHALOGRAPHIC, PSYCHOLOGICAL, AND CLINICAL STUDY USING ORAL TYRAMINE. 123637 02-13
- THE EFFECT OF BC 105 ON THE DEPRESSED MOOD IN MIGRAINE. 134559 02-10
- MILIEU**  
CHANGES IN STAFF ANXIETY AND ATTITUDES DURING A DOUBLE-BLIND STUDY OF HALOPERIDOL IN ACUTE SCHIZOPHRENICS WITHIN A STRUCTURED MILIEU. 128349 02-08
- MIND**  
MIND AND BODY IN BIOLOGICAL PSYCHIATRY. 127517 02-14
- MINIMAL**  
RESERPINE INDUCED ALTERATIONS IN BRAIN AMINES AND THEIR RELATIONSHIP TO CHANGES IN THE INCIDENCE OF MINIMAL ELECTROSHOCK SEIZURES IN MICE. 120360 02-03
- SYMPOSIUM: BEHAVIOR MODIFICATION BY DRUGS. II. PSYCHOLOGICAL EFFECTS OF STIMULANT DRUGS IN CHILDREN WITH MINIMAL BRAIN DYSFUNCTION. 121989 02-14
- MINOR**  
DISRUPTION OF A TEMPORAL DISCRIMINATION BY THE MINOR TRANQUILIZER, OXAZEPAM. 119982 02-04
- SINGLE VERSUS REPEATED DOSAGE OF THE MINOR TRANQUILIZER CHLORDIAZEPOXIDE (LIBRIUM). 120655 02-17
- EFFECT OF MINOR AND MAJOR TRANQUILIZERS ON SOMATOSENSORY EVOKED POTENTIALS. 124152 02-13
- MAJOR AND MINOR TRANQUILIZERS IN THE TREATMENT OF ANXIETY STATES. 133218 02-11
- MIRTH**  
MIRTH AND MARIJUANA: PRELIMINARY FINDINGS. (UNPUBLISHED PAPER). 132366 02-15
- MITOCHONDRIA**  
CALCIUM EFFLUX AND RESPIRATORY INHIBITION IN BRAIN MITOCHONDRIA: EFFECTS OF CHLORPROMAZINE METABOLITES. 122535 02-03
- ULTRASTRUCTURAL CHANGES IN ISOLATED RAT BRAIN MITOCHONDRIA. 133048 02-03
- MITOCHONDRIAL**  
EFFECT OF DELTA9-TETRAHYDROCANNABINOL ON MITOCHONDRIAL PROCESSES. 119054 02-03
- MIXED**  
MIXED FUNCTION OXIDASE AND ETHANOL METABOLISM IN PERFUSED RAT LIVER. 121546 02-03
- DOXEPIN AND AMITRIPTYLINE PERPHENAZINE IN MIXED ANXIOUS DEPRESSED NEUROTIC OUTPATIENTS: A COLLABORATIVE CONTROLLED STUDY. 123933 02-10
- MK-485**  
INHIBITION OF DOPA DECARBOXYLATION BY RO-4-4602, MK-485 AND MK-486 IN HUMAN LIVER HOMOGENATES. 122081 02-03
- MK-486**  
INHIBITION OF DOPA DECARBOXYLATION BY RO-4-4602, MK-485 AND MK-486 IN HUMAN LIVER HOMOGENATES. 122081 02-03
- INHIBITION OF HEPATIC MICROSOMAL DRUG METABOLISM BY THE HYDRAZINES RO-4-4602, MK-486, AND PROCARBAZINE HYDROCHLORIDE. 132893 02-03
- MODEL**  
THE RESPECTIVE INVOLVEMENT OF NORADRENALINE AND ITS DEAMINATED METABOLITES IN WAKING AND PARADOXICAL SLEEP: A NEUROPHARMACOLOGICAL MODEL. 119683 02-03
- IMPLICATIONS OF AMPHETAMINE INDUCED STEREOTYPED BEHAVIOR AS A MODEL FOR TARDIVE DYSKINESIAS. 126230 02-13
- TESTING SOME IMPLICATIONS OF THE SENSORY PHYSIOLOGICAL MODEL OF THE TIME SENSE. 130354 02-14
- CLINICAL AND EEG EFFECTS OF GB-94, A TETRACYCLIC ANTIDEPRESSANT (EEG MODEL IN DISCOVERY OF A NEW PSYCHOTROPIC DRUG). 132894 02-07
- AMPHETAMINE PSYCHOSIS: A MODEL SCHIZOPHRENIA MEDIATED BY CATECHOLAMINES. 134118 02-15

## MODELS

INTRODUCTION TO SCIENTIFIC MODELS AND PSYCHOPATHOLOGY.

126934 02-06

THE IMPACT OF SCIENTIFIC MODELS ON CLINICAL PSYCHOPHARMACOLOGY: A PSYCHIATRISTS VIEW.

126937 02-17

THE IMPACT OF SCIENTIFIC MODELS ON CLINICAL PSYCHOPHARMACOLOGY: A PSYCHIATRISTS VIEW.

126938 02-17

THE IMPACT OF SCIENTIFIC MODELS ON CLINICAL PSYCHOPHARMACOLOGY: A PHARMACOLOGISTS VIEW.

126939 02-17

THE IMPACT OF SCIENTIFIC MODELS ON CLINICAL PSYCHOPHARMACOLOGY: A PHARMACOLOGISTS VIEW.

126940 02-17

## MODIFICATION

ON THE INVOLVEMENT OF THE CAUDATE-PUTAMEN, GLOBUS-PALLIDUS AND SUBSTANTIA-NIGRA WITH NEUROLEPTIC AND CHOLINERGIC MODIFICATION OF LOCOMOTOR ACTIVITY.

121274 02-03

SYMPOSIUM: BEHAVIOR MODIFICATION BY DRUGS. III. THE CLINICAL USE OF STIMULANT DRUGS IN CHILDREN.

121988 02-14

SYMPOSIUM: BEHAVIOR MODIFICATION BY DRUGS. II. PSYCHOLOGICAL EFFECTS OF STIMULANT DRUGS IN CHILDREN WITH MINIMAL BRAIN DYSFUNCTION.

121989 02-14

SYMPOSIUM: BEHAVIOR MODIFICATION BY DRUGS. I. PHARMACOLOGY OF THE AMPHETAMINES.

121990 02-13

## MODIFIED

CHLORDIAZEPOXIDE MODIFIED EXPLORATION IN RATS.

120788 02-04

## MODIFIERS

COMPARISON OF CHLORDIAZEPOXIDE, METHYSERGIDE, AND CINANSERIN AS MODIFIERS OF PUNISHED BEHAVIOR AND AS ANTAGONISTS OF N,N DIMETHYLTRYPTAMINE.

132776 02-04

## MODIFY

EFFECT OF DRUGS THAT MODIFY 3,5 AMP CONCENTRATIONS ON MORPHINE ANALGESIA.

119303 02-03

## MODIFYING

EFFECTIVENESS OF DIAZEPAM AND METHYLPHENIDATE IN MULTIPLE DOSAGES IN MODIFYING INFANT TRAUMA EFFECTS.

134104 02-04

## MODITEN-RETARD

CLINICAL TESTING OF A RETARD NEUROLEPTIC: FLUPHENAZINE ENANTHATE (MODITEN-RETARD, SQUIBB LAB.).

122306 02-07

## MODULATIONS

TIME DRUG MODULATIONS OF PHOTICALLY EVOKED AFTER-DISCHARGE PATTERNS.

122062 02-03

## MOLINDONE

COMPARISON OF THE CLINICAL AND ELECTROENCEPHALOGRAPHICAL EFFECTS OF MOLINDONE AND TRIFLUOPERAZINE IN ACUTE SCHIZOPHRENIC PATIENTS.

120824 02-08

CLINICAL EVALUATION OF THE EFFICACY OF MOLINDONE AND CHLORDIAZEPOXIDE IN ANXIOUS OUTPATIENTS.

132717 02-10

## MONKEY

DELTA9-TETRAHYDROCANNABINOL AND ITS METABOLITES IN MONKEY BRAINS.

121318 02-03

EFFECTS OF PROPRANOLOL, PHENTOLAMINE AND METHYL ATROPINE ON CARDIOVASCULAR FUNCTION IN THE SQUIRREL MONKEY DURING BEHAVIORAL EXPERIMENTS.

122179 02-03

THE EFFECTS OF A MARIJUANA EXTRACT ON TWO-CHOICE DISCRIMINATION LEARNING IN THE SQUIRREL MONKEY.

131445 02-04

SCHEDULE-DEPENDENT EFFECTS IN AMPHETAMINE AND MORPHINE SELF-ADMINISTRATION BY SQUIRREL MONKEY.

131446 02-04

## MONKEYS

MECHANISMS FOR THE EFFLUX OF 14C-DOPA AND 14C-DOPAMINE FROM THE CSF OF RHESUS MONKEYS.

118853 02-03

HOW THEY'RE USING MONKEYS TO STUDY DEPRESSION.

119464 02-04

THE ONTOGENY OF 14C-DOPAMINE CLEARANCE FROM THE CEREBRAL VENTRICLES OF DEVELOPING RHESUS MONKEYS.

120218 02-03

NEUROPHARMACOLOGICAL STUDY OF DELTA9-THC AND DELTA8-L-TETRAHYDROCANNABINOLS IN MONKEYS AND MICE.

120814 02-04

THE EFFECT OF NOREPINEPHRINE REPLENISHMENT ON ALPHA-METHYL-P-TYROSINE TREATED MONKEYS.

130110 02-04

PUNISHED AND UNPUNISHED OPERANT BEHAVIOR AFTER ATROPINE ADMINISTRATION TO THE VMH OF SQUIRREL MONKEYS.

132117 02-04

## MONOAMINE

SEROTONIN SYNTHESIS WITH RAT BRAIN SYNAPTOSOMES: EFFECTS OF SEROTONIN AND MONOAMINE OXIDASE INHIBITORS.

119055 02-03

STEADY-STATE LEVELS OF PROBENECID AND THEIR RELATION TO ACID MONOAMINE METABOLITES IN HUMAN CEREBROSPINAL FLUID.

119985 02-03

EFFECTS OF MONOAMINE OXIDASE INHIBITORS ON THE COPULATORY BEHAVIOR OF MALE RATS.

120009 02-04

HARMINE TREMOR AFTER BRAIN MONOAMINE OXIDASE INHIBITION IN THE MOUSE.

120236 02-03

PARTIAL ANTAGONISM OF THE BEHAVIOURAL AND NEUROCHEMICAL EFFECTS OF PHENCYCLIDINE BY DRUGS AFFECTING MONOAMINE METABOLISM.

120794 02-04

HUMAN BRAIN MONOAMINE OXIDASE: MULTIPLE FORMS AND SELECTIVE INHIBITORS.

120939 02-13

EFFECT OF MELIPRAMINE ON CARBOHYDRATE AND MONOAMINE METABOLISM IN BRAIN OF RESERPINIZED RATS.

121878 02-03

MONOAMINE OXIDASE INHIBITORS.

122405 02-15

PHARMACOLOGICAL IMPLICATIONS OF THE CHANGES OF BRAIN MONOAMINE TURNOVER RATES ELICITED BY (L) AMPHETAMINE AND SOME CHEMICALLY RELATED COMPOUNDS. (UNPUBLISHED PAPER).

123268 02-03

SOME OBSERVATIONS ON THE BEHAVIOURAL EFFECTS OF HALLUCINOGENIC DRUGS ON RATS: POTENTIATION BY TWO DRUGS AFFECTING MONOAMINE METABOLISM.

133180 02-04

SUBSTRATE SELECTIVE AND TISSUE SELECTIVE INHIBITION OF MONOAMINE OXIDASE.

133212 02-03

THE EFFECT OF TRANSAMINE ON THE MONOAMINE OXIDASE ACTIVITY AND PSYCHONEURAL BEHAVIOR IN RATS IN A LABYRINTH.

133674 02-04

## MONOAMINERGIC

GASTRIC LESIONS INDUCED BY RESTRAINT AND COLD EXPOSURE: A STUDY OF CENTRAL MONOAMINERGIC MECHANISM. (UNPUBLISHED PAPER).

132367 02-03

## MONOAMINES

BEHAVIORAL AND BIOCHEMICAL EFFECTS OF PREFERENTIALLY PROTECTING MONOAMINES IN THE BRAIN AGAINST THE ACTION OF RESERPINE.

120231 02-03

THE EFFECTS OF SOME TRYPTAMINE DERIVATIVES ON BRAIN MONOAMINES AND THEIR PRECURSOR AMINO ACIDS.

121279 02-03

SOME ACTIONS OF PENTAZOCINE ON BEHAVIOR AND BRAIN MONOAMINES IN THE RAT.

124333 02-03

## MONODESMETHYL

COMPARATIVE STUDY ON THE INHIBITION OF NA<sup>+</sup>, K<sup>+</sup> ACTIVATED ATPASE ACTIVITY BY CHLORPROMAZINE, PROMAZINE, IMIPRAMINE, AND THEIR MONODESMETHYL METABOLITES.

122091 02-03

## MONOOXYGENASE

SPECTRAL INTERACTIONS OF MARIJUANA CONSTITUENTS (CANNABINOIDS) WITH RAT LIVER MICROSOMAL MONOOXYGENASE SYSTEM.

122097 02-03

## MONOXIDE

CARBON MONOXIDE INDUCED PARKINSONISM.

122172 02-11

## MOOD

DOSE-RESPONSES AND RELATIONSHIPS BETWEEN ANTICHOLINERGIC ACTIVITY AND MOOD WITH TRICYCLIC ANTIDEPRESSANTS.

122193 02-14

THE EFFECT OF BC 105 ON THE DEPRESSED MOOD IN MIGRAINE.

134559 02-10

## MOODINESS

TREATMENT OF RESTLESSNESS AND MOODINESS IN CHILDREN.

125954 02-14

## MORBID

MORBID JEALOUSY: CLINICAL TESTING OF TREATMENT WITH PROPERICAZINE.

133172 02-11

## Subject Index

## Psychopharmacology Abstracts

### MORPHINE

- EFFECTS OF MORPHINE AND CALCIUM ON RESPIRATION OF RAT BRAIN SLICES. 118999 02-03
- MORPHINE CATALEPSY IN THE RAT: RELATION TO STRIATAL DOPAMINE METABOLISM. 119032 02-03
- EFFECT OF MORPHINE ON TYROSINE HYDROXYLASE ACTIVITY IN MOUSE BRAIN. 119033 02-03
- COMPARISON OF THE DOSE-RESPONSE EFFECTS OF MORPHINE ON BRAIN AMINES, ANALGESIA AND ACTIVITY IN MICE. 119037 02-03
- EFFECT OF 6-HYDROXYDOPAMINE ON CATECHOLAMINE CONCENTRATIONS AND BEHAVIOR IN THE MORPHINE TOLERANT RAT. 119048 02-04
- CHEMICAL SYNTHESIS AND ANALGESIC EFFECT OF MORPHINE ETHEREAL SULFATES. 119052 02-03
- EFFECT OF DRUGS THAT MODIFY 3,5 AMP CONCENTRATIONS ON MORPHINE ANALGESIA. 119303 02-03
- MORPHINE INDUCED INCREASES IN THE INCORPORATION OF 14C-TYROSINE INTO 14C-DOPAMINE AND 14C-NOREPINEPHRINE IN THE MOUSE BRAIN: ANTAGONISM BY NALOXONE AND TOLERANCE. 120358 02-03
- DIAZEPAM AND MORPHINE AS PREMEDICATION FOR GASTROINTESTINAL ENDOSCOPY. 120835 02-13
- THE EFFECTS OF MEPERIDINE AND MORPHINE IN RABBITS PRETREATED WITH PHENELZINE. 121179 02-05
- THE EFFECT OF MORPHINE ON PRIMARY SOMATOSENSORY EVOKED RESPONSES IN THE RAT CEREBRAL CORTEX. 121281 02-04
- SEROTONINERGIC NEUROTRANSMISSION AND MORPHINE ACTIVITY. 121298 02-03
- MORPHINE ENHANCES LATERAL HYPOTHALAMIC SELF-STIMULATION IN THE RAT. 121882 02-04
- INHIBITORY EFFECTS OF CHRONIC ADMINISTRATION OF MORPHINE ON URIDINE AND THYMIDINE INCORPORATING ABILITIES OF MOUSE LIVER AND BRAIN SUBCELLULAR FRACTIONS. 122245 02-03
- EFFECTS OF INTRAVENTRICULAR INJECTED 6-HYDROXYDOPAMINE OR MIDBRAIN RAPHE LESION ON MORPHINE ANALGESIA IN RATS. 122396 02-03
- EFFECT OF MORPHINE DOSE SIZE ON THE CONDITIONED REINFORCING POTENCY OF STIMULI PAIRED WITH MORPHINE. 126906 02-04
- 14C-CATECHOLAMINE SYNTHESIS IN MOUSE BRAIN DURING MORPHINE WITHDRAWAL. 127206 02-05
- CHANGES IN OPERANT BEHAVIOR AS AN INDEX OF A WITHDRAWAL STATE FROM MORPHINE IN RATS. 127528 02-04
- SCHEDULE-DEPENDENT EFFECTS IN AMPHETAMINE AND MORPHINE SELF-ADMINISTRATION BY SQUIRREL MONKEY. 131446 02-04
- BAIT SHYNESS DURING MORPHINE DEPENDENCE. 131447 02-04
- FRACTIONATION BY ZONAL CENTRIFUGATION OF BRAIN OF NORMAL RATS AND RATS TREATED WITH MORPHINE. 132642 02-03
- RELATIVE DEGREE OF TOLERANCE TO MORPHINE SULFATE AND METHADONE HYDROCHLORIDE IN THE RAT AND THE INTERACTION OF DEXAMETHASONE. 133293 02-04
- EFFECTS OF MORPHINE AND ANTAGONISTS ON HYPOTHALAMIC CELL ACTIVITY. 133309 02-03
- AGGRESSIVE BEHAVIOUR INDUCED BY MARIJUANA COMPOUNDS AND AMPHETAMINE IN RATS PREVIOUSLY MADE DEPENDENT ON MORPHINE. 133522 02-04
- OPUM ALKALOIDS XII. QUANTITATIVE DETERMINATION OF MORPHINE IN OPUM BY ISOTOPE DILUTION. 133744 02-06

### MORPHINIZED

- BRAIN MICROSOMAL PROTEIN KINASE IN THE CHRONICALLY MORPHINIZED RAT. 121355 02-03

### MORPHOLOGICAL

- MORPHOLOGICAL DATA ON THE TOXICITY OF FLUPHENAZINE. 125259 02-05
- DIFFERENTIAL ANTAGONISM, BY MER-25, OF BEHAVIORAL AND MORPHOLOGICAL EFFECTS OF ESTRADIOL BENZOATE IN RATS. 133714 02-04

### MORTALITY

- MORTALITY RATE IN PATIENTS RECEIVING DIET PILLS. 132959 02-15

### MOTILITY

- THE SPONTANEOUS MOTILITY OF RATS AFTER INTRAVENTRICULAR INJECTION OF DOPAMINE. 121275 02-04

### MOTIVATIONAL

- MOTIVATIONAL IN THE TREATMENT OF ANXIOUS DEPRESSION. 132955 02-07

### MOTIVATION

- EFFECT OF SALICYLATE ON AUDITORY DETECTION THRESHOLDS MEASURED BY CONDITIONED AVOIDANCE RESPONSES: SENSORY IMPAIRMENT OR MOTIVATION DECREMENT 132543 02-03

### MOTIVATIONAL

- AN INVESTIGATION OF AMPHETAMINE ANOREXIA UNDER THREE MOTIVATIONAL CONDITIONS OF FREE FEEDING. 122956 02-04

### MOTOR

- THE EFFECT OF AMANTADINE ON MOTOR ACTIVITY AND CATALEPSY IN RATS. 120017 02-04

- INTRAHYPOTHALAMIC AND INTRASTRIATAL DOPAMINE AND NOREPINEPHRINE INJECTIONS IN RELATION TO MOTOR HYPERACTIVITY IN RATS. 120019 02-04

- THE CONCURRENT EFFECTS OF SCOPOLAMINE ON SPONTANEOUS MOTOR ACTIVITY AND THE ACQUISITION OF AN ACTIVE AVOIDANCE RESPONSE. 121276 02-04

- THE EFFECT OF BETA-PHENETHYLAMINE UPON SPONTANEOUS MOTOR ACTIVITY IN MICE: A DUAL EFFECT ON LOCOMOTOR ACTIVITY. 121315 02-04

- EFFECT OF INTRAVENTRICULAR INFUSION OF DOPAMINE AND NOREPINEPHRINE ON MOTOR ACTIVITY. 121370 02-04

- THE ACTION OF NEUROLEPTIC DRUGS ON THE MOTOR SYSTEM IN MAN. 133354 02-13

- THE EFFECTS OF TRANYLCYPROMINE AND CHLORPROMAZINE UPON THE SPONTANEOUS MOTOR ACTIVITY OF MICE. 133624 02-04

- CHANGES IN THE NEURONS OF CERTAIN SECTIONS OF THE RAT BRAIN DURING MOTOR STIMULATION INDUCED BY PHENAMINE. 133958 02-03

### MOUSE

- EFFECT OF MORPHINE ON TYROSINE HYDROXYLASE ACTIVITY IN MOUSE BRAIN. 119033 02-03

- THE EFFECT OF IMMUNOSYPHATECTOMY ON THE RESPONSES OF THE MOUSE TO RESERPINE AND VARIOUS ANTIDEPRESSANT AND STIMULANT DRUGS. 120011 02-03

- EFFECT OF CENTRAL STIMULANTS AND DEPRESSANTS ON MOUSE BRAIN ACETYLCHOLINE AND CHOLINE LEVELS. 120232 02-03

- HARMINE TREMOR AFTER BRAIN MONOAMINE OXIDASE INHIBITION IN THE MOUSE. 120236 02-03

- MORPHINE INDUCED INCREASES IN THE INCORPORATION OF 14C-TYROSINE INTO 14C-DOPAMINE AND 14C-NOREPINEPHRINE IN THE MOUSE BRAIN: ANTAGONISM BY NALOXONE AND TOLERANCE. 120358 02-03

- EFFECTS OF INTRAHIPPOCAMPAL INJECTIONS WITH METHYLSCOPOLAMINE AND NEOSTIGMINE UPON EXPLORATORY BEHAVIOUR IN TWO INBRED MOUSE STRAINS. 120789 02-04

- DYNAMICS OF THE REGULATION OF HISTAMINE LEVELS IN MOUSE BRAIN. 121072 02-03

- THE EFFECT OF THE NEURONAL EXCITANT N-METHYL-D-ASPARTATE ON THE METABOLISM OF MOUSE BRAIN AMINO ACIDS LABELLED FROM (14C)BICARBONATE AND L-(U-14C)ASPARTATE. 121965 02-03

- ANALGESIC ACTIVITY OF DELTA9-TETRAHYDROCANNABINOL IN THE RAT AND MOUSE. 122200 02-04

- PROTECTION BY DESIPRAMINE OF 6-HYDROXYDOPAMINE INDUCED DAMAGE TO ADRENERGIC NERVE TERMINALS IN MOUSE HEART. 122229 02-03

- INHIBITORY EFFECTS OF CHRONIC ADMINISTRATION OF MORPHINE ON URIDINE AND THYMIDINE INCORPORATING ABILITIES OF MOUSE LIVER AND BRAIN SUBCELLULAR FRACTIONS. 122245 02-03

- 14C-CATECHOLAMINE SYNTHESIS IN MOUSE BRAIN DURING MORPHINE WITHDRAWAL. 127206 02-05

- SPECIFICITY OF THE EFFECT OF LITHIUM INJECTIONS ON THE ENTRY OF CARBON ATOMS OF GLUCOSE INTO MOUSE BRAIN IN VIVO. 132777 02-03
- THE EFFECT OF BENZODIAZEPINES ON BRAIN AMINES OF THE MOUSE. 132779 02-03
- RELATIONSHIP BETWEEN HYPOTHERMIA AND SOME CHLORPROMAZINE INDUCED METABOLIC CHANGES IN MOUSE BRAIN. 133526 02-03
- WHOLE-BODY AUTORADIOGRAPHY OF THE PREGNANT MOUSE AFTER ADMINISTRATION OF C14-DELTA9-THC. 133727 02-03
- MOUTH**
- A CONTROLLED STUDY ON THE POSSIBLE EFFECT OF DIHYDROERGOTAMINE AGAINST DRYNESS OF THE MOUTH IN PATIENTS TREATED WITH TRICYCLIC ANTIDEPRESSANTS. 134312 02-13
- MOVEMENT**
- INVOLUNTARY MOVEMENT DISORDER CAUSED BY METHYLDOPA. 120853 02-13
- MOVEMENTS**
- TREATMENT OF CHOREIC MOVEMENTS WITH PERPHENAZINE. 128336 02-11
- MULTIPLE**
- HUMAN BRAIN MONOAMINE OXIDASE: MULTIPLE FORMS AND SELECTIVE INHIBITORS. 120939 02-13
- DRUGS AND PUNISHED RESPONDING I: RATE-DEPENDENT EFFECTS UNDER MULTIPLE SCHEDULES. 128323 02-04
- MULTIPLE REGRESSION TECHNIQUES IN PREDICTING PATIENT RESPONSE TO PSYCHOPHARMACOLOGIC DRUGS. 133644 02-16
- EFFECTIVENESS OF DIAZEPAM AND METHYLPHENIDATE IN MULTIPLE DOSAGES IN MODIFYING INFANT TRAUMA EFFECTS. 134104 02-04
- MURINE**
- TRANSFORMATION OF FISCHER RAT EMBRYO CELLS BY THE COMBINED ACTION OF MURINE LEUKEMIA VIRUS AND (-) TRANS-DELTA9-TETRAHYDROCANNABINOL. 121287 02-03
- MUSCLE**
- FURTHER PHARMACOLOGICAL STUDY ON ANTIAGGRESSIVE, SEDATIVE AND MUSCLE RELAXANT 8-CHLORO-6-PHENYL-4H-S-TRIAZOLOBENZODIAZEPINE (D-407A) IN EXPERIMENTAL ANIMALS: COMPARATIVE STUDY ON POTENCY AND DURATION. 130909 02-04
- MUSCLES**
- PHARMACOLOGICAL STUDIES OF NEW INDOLE ALKALOIDS, RUGULOVASINE A AND B HYDROCHLORIDE: I.EFFECTS OF BOTH ALKALOIDS ON CARDIOVASCULAR AND CENTRAL NERVOUS SYSTEM, AND SMOOTH MUSCLES. 133217 02-02
- MUSTARD**
- CHRONIC EFFECTS OF SINGLE NITROGEN MUSTARD INJECTION ON THE ACTIVITY RESPONSE OF ALBINO RATS. 134101 02-04
- MYELIN**
- INTERACTION OF HALLUCINOGENIC DRUGS WITH ENCEPHALITOGENIC PROTEIN OF MYELIN. 128457 02-13
- MYOCLONIC**
- A DRUG-INDUCED CEREBRAL REACTION: A CASE OF MYOCLONIC STATUS UNDER TREATMENT WITH TRICYCLIC ANTIDEPRESSIVES. 122340 02-15
- N-HYDROXYLATION**
- PHENOBARBITAL MEDIATED INCREASE IN RING AND N-HYDROXYLATION OF THE CARCINOGEN N-2-FLUORENYLACETAMIDE, AND DECREASE IN AMOUNTS BOUND TO LIVER DEOXYRIBONUCLEIC ACID. 121265 02-03
- N-METHYL**
- THE NORMAL OCCURRENCE OF TRYPTAMINE IN BRAIN AND ITS CONVERSION TO N-METHYL AND N-DIMETHYLTRYPTAMINE IN VITRO AND IN VIVO. (UNPUBLISHED PAPER). 126244 02-03
- N-METHYL BICUCULLINE, A CONVULSANT MORE POTENT THAN BICUCULLINE. 133716 02-02
- N-METHYL-D-ASPARTATE**
- THE EFFECT OF THE NEURONAL EXCITANT N-METHYL-D-ASPARTATE ON THE METABOLISM OF MOUSE BRAIN AMINO ACIDS LABELLED FROM (14C)BICARBONATE AND L-(U-14C)ASPARTATE. 121965 02-03
- N-METHYL-DL-ASPARTIC**
- EXCITATORY RESPONSES FOLLOWING INTRACAUDATE INJECTION OF N-METHYL-DL-ASPARTIC ACID. 133302 02-02
- N-METHYL-NICOTINAMIDE**
- EXCRETION OF VANILLYL-MANDELIC ACID, HOMOVANILLIC ACID, N-METHYL-NICOTINAMIDE, AND N-METHYL-2-PYRIDONE-5-CARBOXAMIDE IN URINE OF VOLUNTARY TEST PERSONS AND PSYCHIATRIC PATIENTS BEFORE AND AFTER ADMINISTRATION OF METHIONINE. 133265 02-13
- N-METHYL-2-PYRIDONE-5-CARBOXAMIDE**
- EXCRETION OF VANILLYL-MANDELIC ACID, HOMOVANILLIC ACID, N-METHYL-NICOTINAMIDE, AND N-METHYL-2-PYRIDONE-5-CARBOXAMIDE IN URINE OF VOLUNTARY TEST PERSONS AND PSYCHIATRIC PATIENTS BEFORE AND AFTER ADMINISTRATION OF METHIONINE. 133265 02-13
- N-OMEGA-HALOALKYL-N-METHYLAMINOACETOXYLIDE**
- CYCLIZATION OF THREE N-OMEGA-HALOALKYL-N-METHYLAMINOACETOXYLIDE DERIVATIVES IN RELATION TO THEIR LOCAL ANESTHETIC EFFECT IN VITRO AND IN VIVO. 122182 02-03
- N-PHENYL-N-BENZYL-4-AMINO-1-METHYLPYPERIDIN**
- N-PHENYL-N-BENZYL-4-AMINO-1-METHYLPYPERIDIN HCL (BAMIPINE) COMBINED WITH 1-CYCLOHEXYL-1-METHYL 2-METHYLAMINOETHANE (CHP) FOR THE INTERIM AND TERMINAL TREATMENT OF DEPRESSIVE SYNDROMES. 122296 02-07
- N-2-FLUORENYLACETAMIDE**
- PHENOBARBITAL MEDIATED INCREASE IN RING AND N-HYDROXYLATION OF THE CARCINOGEN N-2-FLUORENYLACETAMIDE, AND DECREASE IN AMOUNTS BOUND TO LIVER DEOXYRIBONUCLEIC ACID. 121265 02-03
- NA...**
- EFFECTS OF SOME ANALGESICS AND ANTIDEPRESSANTS ON THE NA... AND K... ADENOSINE TRIPHOSPHATASE FROM CORTICES OF BRAIN AND KIDNEY. 121668 02-13
- COMPARATIVE STUDY ON THE INHIBITION OF NA... ACTIVATED ATPASE ACTIVITY BY CHLORPROMAZINE, PROMAZINE, IMPRAMINE, AND THEIR MONODESMETHYL METABOLITES. 122091 02-03
- NAIVE**
- SELECTIVE INCREASE IN AVOIDANCE RESPONDING BY METHAMPHETAMINE IN NAIVE RATS. 120786 02-04
- AGE AND LACK OF HANDLING AS FACTORS IN THE CONSUMPTION OF AN ETONITAZENE SOLUTION BY NAIVE RATS. 133133 02-04
- NALOXONE**
- MORPHINE INDUCED INCREASES IN THE INCORPORATION OF 14C-TYROSINE INTO 14C-DOPAMINE AND 14C-NOREPINEPHRINE IN THE MOUSE BRAIN: ANTAGONISM BY NALOXONE AND TOLERANCE. 120358 02-03
- FAILURE OF AN OPIATE TO PROTECT MICE AGAINST NALOXONE PRECIPITATED WITHDRAWAL. 122184 02-04
- NARCOSIS**
- EFFECTS OF CATECHOLAMINE SYNTHESIS INHIBITION ON ETHANOL NARCOSIS IN MICE. 118988 02-03
- NARCOSIS IN ELECTROSHOCK WITH A DERIVATIVE OF FENCICLIDINE. 132988 02-13
- NARCOTIC**
- NARCOTIC DRUGS: EFFECTS ON THE SEROTONIN BIOSYNTHETIC SYSTEMS OF THE BRAIN. 121320 02-03
- NARCOTIC ANTAGONISTS: THE SEARCH ACCELERATES. 133082 02-13
- SOME BENZOFURAN CARBOXAMIDE DERIVATIVES WITH NARCOTIC AND ANALGESIC ACTIVITY. 133216 02-02
- NARCOTICS**
- DRUG IDENTIFICATION, PROPERTIES AND CHARACTERISTICS: NARCOTICS, STIMULANTS, DEPRESSANTS, MARIJUANA AND HALLUCINOGENS. 122148 02-03
- EFFECT OF NONINHALATION NARCOTICS ON STIMULATION TRANSMISSION IN THE CORTICOSPINAL SYSTEM. 125261 02-03
- VARIOUS PROBLEMS IN APPLICATION OF HYPNOSIS: HYPNOSIS BY NARCOTICS. 130575 02-17
- NECROSIS**
- ALTERED NOREPINEPHRINE METABOLISM FOLLOWING EXPERIMENTAL SPINAL CORD INJURY. PART 2: PROTECTION AGAINST TRAUMATIC SPINAL CORD HEMORRHAGIC NECROSIS BY NOREPINEPHRINE SYNTHESIS BLOCKADE WITH ALPHA-METHYL-TYROSINE. 121067 02-03
- NEED**
- EVALUATING THE LONG-TERM NEED FOR ANTIPARKINSON DRUGS BY CHRONIC SCHIZOPHRENICS. 120699 02-08



## Subject Index

### NEGATIVE

CONTINGENT NEGATIVE VARIATION AMPLITUDES: MARIHUANA AND ALCOHOL.

129831 02-14

### NEOSTIGMINE

EFFECTS OF INTRAHIPPOCAMPAL INJECTIONS WITH METHYLSCOPOLAMINE AND NEOSTIGMINE UPON EXPLORATORY BEHAVIOUR IN TWO INBRED MOUSE STRAINS.

120789 02-04

### NERVE

EFFECTS OF PHENOTHAZINES ON AMINO ACID TRANSPORT AND PROTEIN SYNTHESIS IN ISOLATED NERVE ENDINGS.

119056 02-03

CHEMICALLY INDUCED DEGENERATION OF INDOLEAMINE - CONTAINING NERVE TERMINALS IN RAT BRAIN.

120813 02-03

THE INFLUENCE OF SOME CENTRALLY ACTING DRUGS ON SYMPATHETIC NERVE ACTIVITY.

121308 02-03

DOPAMINE-BETA-HYDROXYLASE: REGULATION OF ITS SYNTHESIS AND RELEASE FROM NERVE TERMINALS.

122221 02-03

PROTECTION BY DESIPRAMINE OF 6-HYDROXYDOPAMINE INDUCED DAMAGE TO ADRENERGIC NERVE TERMINALS IN MOUSE HEART.

122229 02-03

INTERACTIONS OF ANGIOTENSIN, PHENOXYBENZAMINE AND PROPRANOLOL ON NORADRENALINE RELEASE DURING SYMPATHETIC NERVE STIMULATION.

122568 02-03

EFFECT OF NEUROTROPIC AGENTS ON CHANGES IN BIOELECTRIC ACTIVITY OF THE RENAL NERVE, EVOKED BY STIMULATION OF THE DESCENDING COLUMNS OF THE SPINAL CORD.

125262 02-03

LACK OF TOXIC EFFECT OF GUANETHIDINE ON NERVE CELLS AND SMALL INTENSELY FLUORESCENT CELLS IN CULTURES OF SYMPATHETIC GANGLIA OF NEWBORN RATS.

132656 02-03

### NERVES

LOCAL SYNTHESIS AND BREAKDOWN OF NORADRENALINE IN CONSTRICTED RAT SCIATIC NERVES.

122574 02-03

ENHANCED RELEASE OF DOPAMINE-BETA-HYDROXYLASE AND NOREPINEPHRINE FROM SYMPATHETIC NERVES BY DIBUTYRYL CYCLIC-AMP AND THEOPHYLLINE. (UNPUBLISHED PAPER).

132369 02-03

### NERVOUS

STRENGTH OF THE NERVOUS SYSTEM AS A FUNCTION OF PERSONALITY TYPE AND LEVEL OF AROUSAL.

119068 02-14

CENTRAL NERVOUS SYSTEM MECHANISMS RESPONSIBLE FOR BLOOD PRESSURE ELEVATION INDUCED BY P-CHLOROPHENYLALANINE.

119161 02-03

THE EFFECTS OF SOME DRUGS AFFECTING BRAIN 5-HT ON THE AGGRESSIVE BEHAVIOR AND SPONTANEOUS ELECTRICAL ACTIVITY OF THE CENTRAL NERVOUS SYSTEM OF THE ANT, FORMICA-RUFA.

120812 02-04

THE INDUCTION AND ANTAGONISM OF CENTRAL NERVOUS SYSTEM STIMULANT - INDUCED STEREOTYPED BEHAVIOR IN THE CAT.

122569 02-04

STRUCTURE-ACTIVITY RELATIONSHIP OF 5-TRIAZOLOBENZODIAZEPINES IN CENTRAL NERVOUS DEPRESSANT ACTION.

130910 02-03

EFFECT OF ACTH ON THE SYNTHESIS OF RAPIDLY LABELLED RNA IN THE NERVOUS SYSTEM OF MICE.

132695 02-03

PHARMACOLOGICAL STUDIES OF NEW INDOLE ALKALOIDS, RUGULOVASINE A AND B HYDROCHLORIDE: EFFECTS OF BOTH ALKALOIDS ON CARDIOVASCULAR AND CENTRAL NERVOUS SYSTEM, AND SMOOTH MUSCLES.

133217 02-02

THE PHARMACOLOGY OF N,ALPHA-DIMETHYL-N,BETA-CHLOROETHYL-PHENETHYLAMINE, HCL - EFFECTS ON THE AUTONOMIC NERVOUS SYSTEM.

133295 02-03

### NEUROCHEMICAL

PARTIAL ANTAGONISM OF THE BEHAVIOURAL AND NEUROCHEMICAL EFFECTS OF PHENCYCLIDINE BY DRUGS AFFECTING MONOAMINE METABOLISM.

120794 02-04

PSYCHOACTIVE DRUGS AND BRAIN NEUROCHEMICAL TRANSMITTERS.

121299 02-13

ACUTE PSYCHOSIS INDUCED BY PSYCHOTOMIMETIC DRUG ABUSE: NEUROCHEMICAL FINDINGS.

126220 02-13

### NEUROHUMORAL

PHENETHYLAMINE AS A NEUROHUMORAL AGENT IN BRAIN.

133622 02-03

## Psychopharmacology Abstracts

### NEUROLEPTIC

ON THE INVOLVEMENT OF THE CAUDATE-PUTAMEN, GLOBUS-PALLIDUS AND SUBSTANTIA-NIGRA WITH NEUROLEPTIC AND CHOLINERGIC MODIFICATION OF LOCOMOTOR ACTIVITY.

121274 02-03

CLINICAL TESTING OF A RETARD NEUROLEPTIC: FLUPHENAZINE ENANTHATE (MODITEN-RETARD, SQUIBB LAB.).

122306 02-07

OPIRAN, ANXIETY AND PSYCHOSIS: CLINICAL TESTING OF A NEW INCISIVE NEUROLEPTIC.

132766 02-07

SEDALUM IN PSYCHIATRY IN ITS CAPACITY AS TRANQUILIZER AND NEUROLEPTIC.

133173 02-07

THE EFFECT OF NEUROLEPTIC DRUGS ON CEPHALIC CIRCULATION IN ELDERLY PSYCHIATRIC PATIENTS.

133353 02-11

THE ACTION OF NEUROLEPTIC DRUGS ON THE MOTOR SYSTEM IN MAN.

133354 02-13

INTERACTION BETWEEN NEUROLEPTIC THERAPY AND SOCIOTHERAPEUTIC APPROACH. AN INVESTIGATION WITH PENFLURIDOL AND HALOPERIDOL.

133355 02-08

THE NEUROLEPTIC ACTION OF OXAFUMAZINE, PARTICULARLY IN ACUTE PSYCHOSES.

133626 02-11

FLUSPIRILENE, AN INJECTABLE, AND PENFLURIDOL, AN ORAL LONG-LASTING, NEUROLEPTIC.

134309 02-08

### NEUROLEPTICS

LONG-ACTING NEUROLEPTICS AND OTHER PSYCHOACTIVE DRUGS OF THE FUTURE.

119024 02-17

FLUSPIRILENE AND PIPTHOIAZINE UNDECYLENATE, TWO LONG-ACTING INJECTABLE NEUROLEPTICS: A DOUBLE-BLIND CONTROLLED TRIAL IN RESIDUAL SCHIZOPHRENIA.

121544 02-08

CONTRIBUTION TO LONG-TERM THERAPY FOR SCHIZOPHRENIC PSYCHOSES WITH RETARD NEUROLEPTICS.

121602 02-08

ROLE OF ANTIDEPRESSANTS AND NEUROLEPTICS IN THE TREATMENT OF DEPRESSION.

122976 02-09

AN ATTEMPT TO ADMINISTER NEUROLEPTICS WITH A PROLONGED EFFECT IN THE TREATMENT OF ACUTE PSYCHOTIC STATES.

132752 02-11

STUDIES ON THE ACCUMULATION OF O-METHYLATED DOPAMINE AND NORADRENALINE IN THE RAT BRAIN FOLLOWING VARIOUS NEUROLEPTICS, THYMOLEPTICS AND ACEPERONE.

133129 02-03

TEMPERATURE INCREASES AND BLOOD PROTEIN CHANGES WITH NEUROLEPTICS: WITH SPECIAL CONSIDERATION OF THE NEW DIBENZODIAZEPINE DERIVATIVE, CLOZAPINE.

133350 02-15

### NEUROLOGICAL

A NEUROLOGICAL ANALYSIS OF THE ACTION OF TRANQUILLIZER DERIVATIVES OF BENZODIAZEPINE.

133506 02-13

### NEUROLOGY

EXPERIENCE WITH PROTHIADEN IN NEUROLOGY.

122082 02-10

### NEUROMUSCULAR

CHLOROQUINE INDUCED DEPRESSION OF NEUROMUSCULAR TRANSMISSION.

120233 02-03

THE EFFECT OF DIMORPHOLAMINE ON CRAYFISH NEUROMUSCULAR JUNCTION.

132679 02-03

### NEURON

EFFECT OF PHENOBARBITAL ON A LEECH NEURON.

132678 02-03

ADRENERGIC NEURON BLOCKADE BY CLONIDINE: COMPARISON WITH GUANETHIDINE AND LOCAL ANESTHETICS.

133132 02-03

### NEURONAL

THE EFFECT OF THE NEURONAL EXCITANT N-METHYL-D-ASPARTATE ON THE METABOLISM OF MOUSE BRAIN AMINO ACIDS LABELLED FROM (14C)BICARBONATE AND L-(U-14C)ASPARTATE.

121965 02-03

### NEURONE

THE INTERACTION BETWEEN DESMETHYLIMIPRAMINE AND GUANETHIDINE ON THE RABBIT ILEUM. THE IMPORTANCE OF THE NORADRENALINE UPTAKE PROCESS IN THE REVERSAL OF GUANETHIDINE INDUCED ADRENERGIC NEURONE BLOCKADE.

133214 02-03

**NEURONES**

THE EFFECTS OF METHYLATED TRYPTAMINE DERIVATIVES ON  
BRAINSTEM NEURONES. 121307 02-12

THE EFFECTS OF SELECTIVE LESIONING OF BRAIN SEROTONIN OR  
CATECHOLAMINE CONTAINING NEURONES ON THE ANORECTIC  
ACTIVITY OF FENFLURAMINE AND AMPHETAMINE. 122243 02-03

INTERACTION BETWEEN CHOLINERGIC AND CATECHOLAMINERGIC  
NEURONES IN RAT BRAIN. 132703 02-03

**NEURONS**

DEGENERATION OF CENTRAL NORADRENALINE NEURONS AFTER 6-  
HYDROXYDOPAMINE IN NEWBORN ANIMALS. 122225 02-03

THE MICROELECTROPHORETIC ADMINISTRATION OF NORADRENALINE, 5-  
HYDROXYTRYPTAMINE, ACETYLCHOLINE AND GLYCINE TO SACRAL  
PARASYMPATHETIC PREGANGLIONIC NEURONS. 132153 02-03

ANTAGONISM OF PENTYLENETETRAZOL EXCITATION BY  
ANTICONSULSANTS ON SINGLE BRAIN STEM NEURONS. 132676 02-03

MARIJUANA EFFECTS ON NEURONS IN TISSUE CULTURE. 133943 02-03

CHANGES IN THE NEURONS OF CERTAIN SECTIONS OF THE RAT BRAIN  
DURING MOTOR STIMULATION INDUCED BY PHENAMINE. 133958 02-03

INTERACTION OF THE EFFECT OF LYSERGIC ACID DIETHYLAMIDE AND  
AMINAZINE AT THE LEVEL OF INDIVIDUAL NEURONS OF THE  
MIDBRAIN RETICULAR FORMATION. 134457 02-03

**NEUROPHARMACOLOGICAL**

THE RESPECTIVE INVOLVEMENT OF NORADRENALINE AND ITS  
DEAMINATED METABOLITES IN WAKING AND PARADOXICAL SLEEP: A  
NEUROPHARMACOLOGICAL MODEL. 119683 02-03

NEUROPHARMACOLOGICAL STUDY OF DELTA9-THC AND DELTA8-L-  
TETRAHYDROCANNABINOLS IN MONKEYS AND MICE. 120814 02-04

**NEUROPHARMACOLOGY**

THE BIOCHEMICAL BASIS OF NEUROPHARMACOLOGY. 120487 02-17

DRUG THERAPY OF CLINICAL DEPRESSIONS -- CURRENT STATUS AND  
IMPLICATIONS FOR RESEARCH ON NEUROPHARMACOLOGY OF THE  
AFFECTIVE DISORDERS. 127220 02-09

PERSPECTIVES IN NEUROPHARMACOLOGY: A TRIBUTE TO JULIUS  
AXELROD. 133110 02-17

THE CALEPTIC STATE INDUCED BY KETAMINE: A REVIEW OF THE  
NEUROPHARMACOLOGY OF ANESTHESIA. 133743 02-03

**NEUROPHYSIOLOGICAL**

EEG AND NEUROPHYSIOLOGICAL STUDIES OF LITHIUM IN NORMAL  
VOLUNTEERS. 122987 02-09

THE NEUROPHYSIOLOGICAL EFFECTS OF AMPHETAMINE UPON THE CAT  
AMYGDALA. 127340 02-13

**NEUROPSYCHIATRIC**

NEUROPSYCHIATRIC MANIFESTATIONS OF KETAMINE HYDROCHLORIDE.  
122738 02-14

**NEUROPSYCHIATRICALY**

EFFECTS OF IMIPRAMINE AND DEXTROAMPHETAMINE ON BEHAVIOR OF  
NEUROPSYCHIATRICALY IMPAIRED CHILDREN. 121449 02-14

**NEUROPSYCHOLOGICAL**

NEUROPSYCHOLOGICAL TEST PERFORMANCE BEFORE AND AFTER  
SYMPTOM REMOVAL IN A CHILD WITH GILLES-DE-LA-TOURETTE  
SYNDROME. 125802 02-14

NEUROPSYCHOLOGICAL AND ELECTROMYOGRAPHIC STUDIES ON THE  
SHORT-TERM PSYCHOTROPIC EFFECT OF L-DOPA. 133347 02-14

**NEUROSES**

RESULTS OF POSEDRIE THERAPY WITH NEUROSES AND  
PSYCHOPATHIES. 126998 02-10

PSYCHOACTIVE MEDICATION AND CONCERN: THE URBAN PHYSICIANS  
PRACTICAL RX FOR NEUROSES. 131345 02-10

**NEUROSIS**

PIMOZIDE IN ANXIETY NEUROSIS. 121310 02-10

**NEUROTIC**

THE USE OF AL-1612 ON ANXIOUS NEUROTIC OUTPATIENTS; A  
PRELIMINARY STUDY. 118987 02-09

PART 2. IMPROVEMENT CRITERIA IN DRUG TRIALS WITH NEUROTIC  
PATIENTS. 121406 02-10

OXAZEPAM IN THE TREATMENT OF NEUROTIC DISTURBANCES AS WELL  
AS IN THE WITHDRAWAL MANAGEMENT OF ALCOHOLICS AND DRUG  
ADDICTS. 121600 02-10

DOXEPIIN AND AMITRIPTYLINE PERPHENAZINE IN MIXED ANXIOUS  
DEPRESSED NEUROTIC OUTPATIENTS: A COLLABORATIVE CONTROLLED  
STUDY. 123933 02-10

**NEUROTICS**

A DOUBLE-BLIND CONTROLLED TRIAL OF PSYCHOTROPIC DRUG  
OXAZOLAM ON NEUROTICS, WITH SPECIAL REFERENCE TO ITS  
HYPNOTIC EFFECT. 130068 02-10

**NEUROTRANSMISSION**

SEROTINERGIC NEUROTRANSMISSION AND MORPHINE ACTIVITY.  
121298 02-03

**NEUROTRANSMITTERS**

CHOLINERGIC EFFECTS ON ADRENERGIC NEUROTRANSMITTERS IN RABBIT  
BRAIN PARTS. 132690 02-03

SYNERGY OF ETHANOL AND PUTATIVE NEUROTRANSMITTERS: GLYCINE  
AND SERINE. 134043 02-03

**NEUROTROPIC**

THE HAZARD OF NEUROTROPIC DRUGS IN THE FERTILE YEARS.  
121578 02-15

EFFECT OF NEUROTROPIC AGENTS ON CHANGES IN BIOELECTRIC  
ACTIVITY OF THE RENAL NERVE, EVOKED BY STIMULATION OF THE  
DESCENDING COLUMNS OF THE SPINAL CORD. 125262 02-03

**NEW**

CLINICAL EVALUATION OF A NEW PSYCHOTROPIC DRUG; Y-4153 --  
COMPARATIVE STUDY WITH CHLORPROMAZINE USING A DOUBLE-  
BLIND METHOD. 120632 02-08

A DOUBLE-BLIND INVESTIGATION OF A NEW SOPORIFIC DRUG FOR USE  
WITH DEPRESSIVE PATIENTS. 121599 02-10

PHARMACOLOGY OF A NEW BETA-ADRENOCEPTOR BLOCKING AGENT,  
THE 15219. 122232 02-03

ABERRANT RESPONSE TO DIAZEPAM: A NEW SYNDROME. 129967 02-15

QUANTITATIVE PHARMACO-ELECTROENCEPHALOGRAPHY IN THE  
DISCOVERY OF A NEW GROUP OF PSYCHOTROPIC DRUGS. 130472 02-07

STUDIES ON BENZODIAZEPINES II: THE NEW SYNTHETIC METHODS OF  
1,4 BENZODIAZEPINES. 130913 02-01

PHARMACODYNAMIC EFFECTS OF 8-CHLORO-6-PHENYL 4H-S-  
TRIAZOLOBENZODIAZEPINE (D-40TA), A NEW CENTRAL DEPRESSANT.  
131056 02-02

OPIRAN, ANXIETY AND PSYCHOSIS: CLINICAL TESTING OF A NEW  
INCISIVE NEUROLEPTIC. 132766 02-07

THE EFFECT OF ELANTRINE, A NEW ANTIPARKINSONISM AGENT, ON  
DRUG-INDUCED TREMOR IN MICE. 132778 02-11

CLINICAL AND EEG EFFECTS OF GB-94, A TETRACYCLIC ANTIDEPRESSANT  
(EEG MODEL IN DISCOVERY OF A NEW PSYCHOTROPIC DRUG).  
132894 02-07

SOMATOSENSORY EVOKED POTENTIAL: AN OBJECTIVE INDICATOR OF  
THE THERAPY EFFICACY OF A NEW PSYCHOTROPIC DRUG,  
CLORAZEPATE DIPOTASSIUM (TRANXENE). 132953 02-07

PS-2747: A NEW ANTIDEPRESSANT AGENT. 133128 02-03

PHARMACOLOGICAL STUDIES OF NEW INDOLE ALKALOIDS,  
RUGULOVASINE A AND B HYDROCHLORIDE: EFFECTS OF BOTH  
ALKALOIDS ON CARDIOVASCULAR AND CENTRAL NERVOUS SYSTEM,  
AND SMOOTH MUSCLES. 133217 02-02

IMPORTANCE OF ADEQUATE DOSAGE DETERMINATION OF DRUG  
EFFICACY: TRIAL OF A NEW BUTYRPHENONE COMPOUND ON ACUTE  
SCHIZOPHRENICS. 133263 02-07

TEMPERATURE INCREASES AND BLOOD PROTEIN CHANGES WITH  
NEUROLEPTICS, WITH SPECIAL CONSIDERATION OF THE NEW  
DIBENZODIAZEPINE DERIVATIVE, CLOZAPINE. 133350 02-15

NEW DYSTONIC SYNDROME ASSOCIATED WITH BUTYRPHENONE  
THERAPY. 133516 02-15

## Subject Index

### NEWBORN

DEGENERATION OF CENTRAL NORADRENALINE NEURONS AFTER 6-HYDROXYDOPAMINE IN NEWBORN ANIMALS. 122225 02-03

LACK OF TOXIC EFFECT OF GUANETHIDINE ON NERVE CELLS AND SMALL INTENSELY FLUORESCENT CELLS IN CULTURES OF SYMPATHETIC GANGLIA OF NEWBORN RATS. 132656 02-03

### NICOTINAMIDE

FURTHER CHARACTERIZATION OF A REDUCED NICOTINAMIDE ADENINE DINUCLEOTIDE PHOSPHATE DEPENDENT ALDEHYDE REDUCTASE FROM BOVINE BRAIN: INHIBITION BY PHENOTHIAZINE DERIVATIVES. 121634 02-03

NICOTINAMIDE INEFFECTIVE IN PARKINSONISM. 122445 02-11

### NICOTINE

DEVELOPMENT OF BEHAVIOURAL TOLERANCE TO NICOTINE IN THE RAT. 133524 02-04

### NICOTINIC

NICOTINIC ACID, THIORIDAZINE, FLUOXYMESTERONE AND THEIR COMBINATIONS IN HOSPITALIZED GERIATRIC PATIENTS: A SYSTEMATIC CLINICAL STUDY. 130668 02-11

### NIGHT

THE EFFECT OF OXAZEPAM ON INTERRUPTED DAY SLEEP AFTER NIGHT WORK. 132785 02-14

INFLUENCE OF L-DOPA ON NIGHT SLEEP IN PARKINSONIAN PATIENTS. 133569 02-03

### NIGRAL

TYROSINE HYDROXYLATION IN THE RAT STRIATUM IN VITRO AND IN VIVO AFTER NIGRAL LESION AND CHLORPROMAZINE TREATMENT. 132683 02-03

### NIMH

PROGRESS REPORT ON THE ASSESSMENT PROGRAM OF THE NIMH ADDICTION RESEARCH CENTER. (UNPUBLISHED PAPER). 123040 02-17

### NITRAZEPAM

EFFECT OF NITRAZEPAM IN CHRONIC OBSTRUCTIVE BRONCHITIS. 133719 02-15

### NITROGEN

CHRONIC EFFECTS OF SINGLE NITROGEN MUSTARD INJECTION ON THE ACTIVITY RESPONSE OF ALBINO RATS. 134101 02-04

### NO-GO

DRUG EFFECTS ON BASELINE GO/NO-GO DISCRIMINATION AND SERIAL DISCRIMINATION REVERSAL LEARNING. 131285 02-04

### NON-WORKER

THE BEHAVIOR OF WORKER AND NON-WORKER RATS UNDER THE INFLUENCE OF (-)- $\Delta^9$ -TRANS-TETRAHYDROCANNABINOL, CHLORPROMAZINE AND AMYLOBARBITONE. 119981 02-04

### NONADDICTS

ANTIDEPRESSANT DRUG THERAPY: ADDICTS VERSUS NONADDICTS. 119758 02-14

### NONINHALATION

EFFECT OF NONINHALATION NARCOTICS ON STIMULATION TRANSMISSION IN THE CORTICOSPINAL SYSTEM. 125261 02-03

### NONPARANOID

AUDITORY SIGNAL DETECTION IN PARANOID AND NONPARANOID SCHIZOPHRENICS. 129838 02-08

### NORADRENALINE

HYPOTHETICAL ROLE OF DEAMINATED METABOLITES OF NORADRENALINE IN PGO SPIKING AND PS. 119392 02-03

THE RESPECTIVE INVOLVEMENT OF NORADRENALINE AND ITS DEAMINATED METABOLITES IN WAKING AND PARADOXICAL SLEEP: A NEUROPHARMACOLOGICAL MODEL. 119683 02-03

ADRENALINE OR PERIPHERAL NORADRENALINE DEPLETION AND PASSIVE AVOIDANCE IN THE RAT. 122059 02-03

DEGENERATION OF CENTRAL NORADRENALINE NEURONS AFTER 6-HYDROXYDOPAMINE IN NEWBORN ANIMALS. 122225 02-03

INTERACTIONS OF ANGIOTENSIN, PHENOXYBENZAMINE AND PROPRANOLOL ON NORADRENALINE RELEASE DURING SYMPATHETIC NERVE STIMULATION. 122568 02-03

LOCAL SYNTHESIS AND BREAKDOWN OF NORADRENALINE IN CONSTRICTED RAT SCIATIC NERVES. 122574 02-03

## Psychopharmacology Abstracts

THE MICROELECTROPHORETIC ADMINISTRATION OF NORADRENALINE, 5-HYDROXYTRYPTAMINE, ACETYLCHOLINE AND GLYCINE TO SACRAL PARASYMPATHETIC PREGANGLIONIC NEURONS. 132153 02-03

STUDIES ON THE ACCUMULATION OF O-METHYLATED DOPAMINE AND NORADRENALINE IN THE RAT BRAIN FOLLOWING VARIOUS NEUROLEPTICS, THYMOLEPTICS AND ACEPERONE. 133129 02-03

THE INTERACTION BETWEEN DESMETHYLIMIPRAMINE AND GUANETHIDINE ON THE RABBIT ILEUM: THE IMPORTANCE OF THE NORADRENALINE UPTAKE PROCESS IN THE REVERSAL OF GUANETHIDINE INDUCED ADRENERGIC NEURONE BLOCKADE. 133214 02-03

### NOREPINEPHRINE

INTRAHYPOTHALAMIC AND INTRASTRIATAL DOPAMINE AND NOREPINEPHRINE INJECTIONS IN RELATION TO MOTOR HYPERACTIVITY IN RATS. 120019 02-04

THE EFFECTS OF CHRONIC IMIPRAMINE ADMINISTRATION ON RAT BRAIN LEVELS OF SEROTONIN, 5-HYDROXYINDOLEACETIC ACID, NOREPINEPHRINE AND DOPAMINE. 120359 02-03

BRAIN SEROTONIN AND NOREPINEPHRINE AFTER CONVULSIONS AND RESERPINE. 120526 02-03

NOREPINEPHRINE AND DOPAMINE: ASSAY BY MASS FRAGMENTOGRAPHY IN THE PICOMOLE RANGE. 120529 02-01

ALTERED NOREPINEPHRINE METABOLISM FOLLOWING EXPERIMENTAL SPINAL CORD INJURY. PART 2: PROTECTION AGAINST TRAUMATIC SPINAL CORD HEMORRHAGIC NECROSIS BY NOREPINEPHRINE SYNTHESIS BLOCKADE WITH ALPHA-METHYL-TYROSINE. 121067 02-03

EFFECT OF INTRAVENTRICULAR INFUSION OF DOPAMINE AND NOREPINEPHRINE ON MOTOR ACTIVITY. 121370 02-04

CATECHOLAMINE METABOLISM IN AFFECTIVE DISORDERS - IV. PRELIMINARY STUDIES OF NOREPINEPHRINE METABOLISM IN DEPRESSED PATIENTS TREATED WITH AMITRIPTYLINE. 127215 02-09

THE EFFECT OF NOREPINEPHRINE REPLENISHMENT ON ALPHA-METHYL-P-TYROSINE TREATED MONKEYS. 130110 02-04

ENHANCED RELEASE OF DOPAMINE-BETA-HYDROXYLASE AND NOREPINEPHRINE FROM SYMPATHETIC NERVES BY DIBUTYRYL CYCLIC-AMP AND THEOPHYLLINE. (UNPUBLISHED PAPER). 132369 02-03

CYCLIC-AMP IN BRAIN AREAS: EFFECTS OF AMPHETAMINE AND NOREPINEPHRINE ASSESSED THROUGH THE USE OF MICROWAVE RADIATION AS A MEANS OF TISSUE FIXATION. 133713 02-03

### NOREPINEPHRINE-7-3H

SCHEDULE CONTROLLED AND DRUG-INDUCED RELEASE OF NOREPINEPHRINE-7-3H INTO THE LATERAL VENTRICLE OF RATS. 132689 02-03

### NORMAL

EEG AND NEUROPHYSIOLOGICAL STUDIES OF LITHIUM IN NORMAL VOLUNTEERS. 122987 02-09

EFFECTS OF PLACIDYL ON SLEEP OF NORMAL SUBJECTS. 121413 02-14

THE NORMAL OCCURRENCE OF TRYPTAMINE IN BRAIN AND ITS CONVERSION TO N-METHYL AND N-DIMETHYLTRYPTAMINE IN VITRO AND IN VIVO. (UNPUBLISHED PAPER). 126244 02-03

FRACTIONATION BY ZONAL CENTRIFUGATION OF BRAIN OF NORMAL RATS AND RATS TREATED WITH MORPHINE. 132642 02-03

THE EFFECTS OF SU-21707 ON THE SLEEP ELECTROENCEPHALOGRAPH OF NORMAL SUBJECTS. 132954 02-13

FLURAZEPAM: STUDY OF ITS HYPNOTIC PROPERTIES IN NORMAL SUBJECTS. 133221 02-07

THE EFFECT OF L-DOPA ON CORTICAL AND SUBCORTICAL ELECTRICAL ACTIVITY IN NORMAL UNRESTRAINED RATS. 133294 02-03

### NUCLEI

INSOMNIA AND CEREBRAL METABOLISM OF SEROTONIN IN CAT: IN VITRO SYNTHESIS AND RELEASE OF SEROTONIN 18 H AFTER DESTRUCTION OF THE RAPHE NUCLEI. 119684 02-03

### NUCLEUS

PALLIDAL AND TEGMENTAL INHIBITION OF OSCILLATORY SLOW WAVES AND UNIT ACTIVITY IN THE SUBTHALAMIC NUCLEUS. 122204 02-03

## NUMBERS

- THE EFFECTS OF SCOPOLAMINE ON THE DELAYED RECALL OF NUMBERS TESTS. 126745 02-14

## NURSING

- BUTISOL SODIUM VS. LIBRIUM AMONG GERIATRIC AND YOUNGER OUTPATIENTS AND NURSING HOME PATIENTS. 123885 02-10

## O-AMINO-N-HYDROXYBENZENESULFONAMIDES

- ANTIBACTERIAL ACTIVITY OF O-AMINO-N-HYDROXYBENZENESULFONAMIDES. 125359 02-01

## O-METHYLATED

- STUDIES ON THE ACCUMULATION OF O-METHYLATED DOPAMINE AND NORADRENALINE IN THE RAT BRAIN FOLLOWING VARIOUS NEUROLEPTICS, THYMOLPTICS AND ACEPERONE. 133129 02-03

## OBJECTIVE

- THE EFFECTS OF DRUGS ON OBJECTIVE MEASURES OF THOUGHT DISORDER IN SCHIZOPHRENIC PATIENTS. 120120 02-08
- SOMATOSENSORY EVOKED POTENTIAL: AN OBJECTIVE INDICATOR OF THE THERAPY EFFICACY OF A NEW PSYCHOTROPIC DRUG, CLORAZEPATE DIPOTASSIUM (TRANXENE). 132953 02-07
- OBJECTIVE STUDY OF THE ACTION OF A SOPORIFIC. 133671 02-13

## OBSERVATION

- AN OBSERVATION OF OXAZEPAM DEPENDENCY. 121596 02-10
- CLINICAL PSYCHOPHARMACOLOGICAL ASSESSMENT AND LONG-TERM OBSERVATION USING ELECTRONIC DATA PROCESSING. 133482 02-17

## OBSERVATIONS

- CLINICAL OBSERVATIONS IN ANAFRANIL THERAPY. 121900 02-09
- CERTAIN OBSERVATIONS ON INTERRELATIONSHIPS BETWEEN RESPIRATORY AND CARDIOVASCULAR EFFECTS OF (-) DELTA9-TRANS-TETRAHYDROCANNABINOL. 122394 02-05
- OBSERVATIONS ON THE RELATION OF MIGRAINE AND EPILEPSY: AN ELECTROENCEPHALOGRAPHIC, PSYCHOLOGICAL, AND CLINICAL STUDY USING ORAL TYRAMINE. 123637 02-13
- THE CHANGE OF BEHAVIOR PATTERN OF ALCOHOL ADDICTS TREATED WITH CYANAMIDE DOUBLE MEDICATION - OBSERVATIONS BY THEIR FAMILIES. 129088 02-11
- MANDRAX: CLINICAL, PHARMACOLOGICAL AND TOXICOLOGICAL ASPECTS: STUDY OF 106 OBSERVATIONS. 132903 02-07
- SOME OBSERVATIONS ON THE BEHAVIOURAL EFFECTS OF HALLUCINOGENIC DRUGS ON RATS: POTENTIATION BY TWO DRUGS AFFECTING MONOAMINE METABOLISM. 133180 02-04

## OBSERVED

- THE USE OF PYRACETAM IN SUBJECTIVE SYNDROMES CAUSED BY CRANIAL TRAUMA OBSERVED IN THE PSYCHIATRIC SERVICE OF A GENERAL HOSPITAL. 121855 02-11

## OBSTETRICS

- MASKED DEPRESSION IN OBSTETRICS AND GYNECOLOGY. 125864 02-09

## OBSTRUCTIVE

- EFFECT OF NITRAZEPAM IN CHRONIC OBSTRUCTIVE BRONCHITIS. 133719 02-15

## OCTOPAMINE

- THE BIOSYNTHESIS OF OCTOPAMINE. 124171 02-03

## OFFICE

- COMPARATIVE TRIAL OF LOW DOSE HALOPERIDOL AND FLUPHENAZINE IN OFFICE PATIENTS. 120727 02-07

## OLFACTORY

- EFFECTS OF PSYCHOTROPIC DRUGS ON EMOTIONAL BEHAVIOR IN RATS WITH LIMBIC LESIONS, WITH SPECIAL REFERENCE TO OLFACTORY BULB ABLATIONS. 128458 02-04
- THE EFFECTS OF ANESTHETICS ON SYNAPTIC EXCITATION AND INHIBITION IN THE OLFACTORY BULB. (UNPUBLISHED PAPER). 132508 02-03

## ONTOGENY

- THE ONTOGENY OF 14C-DOPAMINE CLEARANCE FROM THE CEREBRAL VENTRICLES OF DEVELOPING RHESUS MONKEYS. 120218 02-03

## OPERANT

- THE ACTION OF IMIPRAMINE, AMITRIPTYLINE, DOXEPIN AND BUTRIPTYLINE IN AN OPERANT CONDITIONING SCHEDULE. 120014 02-04

- ALCOHOL AND MARIJUANA: A COMPARISON OF EFFECTS ON A TEMPORALLY CONTROLLED OPERANT IN HUMANS. 122178 02-14

- CHANGES IN OPERANT BEHAVIOR AS AN INDEX OF A WITHDRAWAL STATE FROM MORPHINE IN RATS. 127528 02-04

- PUNISHED AND UNPUNISHED OPERANT BEHAVIOR AFTER ATROPINE ADMINISTRATION TO THE VMH OF SQUIRREL MONKEYS. 132117 02-04

## OPIATE

- FAILURE OF AN OPIATE TO PROTECT MICE AGAINST NALOXONE PRECIPITATED WITHDRAWAL. 122184 02-04

- INHALATION INDUCED TOLERANCE AND PHYSICAL DEPENDENCE: THE HAZARD OF OPIATE SUFFUSED MARIJUANA. 127693 02-03

- PERFECT OPIATE ANTAGONIST 134033 02-13

## OPIATES

- HUMAN CHROMOSOMES AND OPIATES. 126231 02-15

## OPIRAN

- OPIRAN, ANXIETY AND PSYCHOSIS: CLINICAL TESTING OF A NEW INCISIVE NEUROLEPTIC. 132766 02-07

## OPIUM

- OPIUM ALKALOIDS XII: QUANTITATIVE DETERMINATION OF MORPHINE IN OPIUM BY ISOTOPE DILUTION. 133744 02-06

## OPTIC

- EFFECTS OF PENTOBARBITAL ON THE VISUAL EVOKED RESPONSE IN THE AVIAN OPTIC TECTUM. 122012 02-03

## ORAL

- ORAL AND PARENTERAL FORMULATIONS OF MARIJUANA CONSTITUENTS. 121284 02-06

- OBSERVATIONS ON THE RELATION OF MIGRAINE AND EPILEPSY: AN ELECTROENCEPHALOGRAPHIC, PSYCHOLOGICAL, AND CLINICAL STUDY USING ORAL TYRAMINE. 123637 02-13

- TYPES OF ORAL CONTRACEPTIVES, DEPRESSION, AND PREMENSTRUAL SYMPTOMS. 125961 02-14

- HISTORY OF DEPRESSION AS A RISK FACTOR FOR DEPRESSION WITH ORAL CONTRACEPTIVES AND DISCONTINUANCE. 125962 02-14

- FLUSPIRILENE, AN INJECTABLE, AND PENFLURIDOL, AN ORAL LONG-LASTING, NEUROLEPTIC. 134309 02-08

## ORGANS

- HISTOENZYMOLGIC STUDIES OF THE BRAIN TISSUES AND INTERNAL ORGANS OF EXPERIMENTAL ANIMALS IN A SINGULAR ADMINISTRATION OF LSD-25. 133505 02-03

## ORTHOSTATIC

- IDIOPATHIC ORTHOSTATIC HYPOTENSION TREATED WITH LEVODOPA AND MAO INHIBITOR: A PRELIMINARY REPORT. 122102 02-13

## OSCILLATORY

- PALLIDAL AND TEGMENTAL INHIBITION OF OSCILLATORY SLOW WAVES AND UNIT ACTIVITY IN THE SUBTHALAMIC NUCLEUS. 122204 02-03

## OUTPATIENT

- PREDICTORS OF AMITRIPTYLINE RESPONSE IN OUTPATIENT DEPRESSIVES. 122426 02-14

- A CASE OF EARLY OXAZEPAM ADDICTION TREATED IN THE OUTPATIENT CLINIC. 133450 02-15

## OUTPATIENTS

- THE USE OF AL-1612 ON ANXIOUS NEUROTIC OUTPATIENTS; A PRELIMINARY STUDY. 118987 02-09

- METHYLPHENIDATE IN MILDLY DEPRESSED OUTPATIENTS. 119035 02-10

- BUTISOL SODIUM VS. LIBRIUM AMONG GERIATRIC AND YOUNGER OUTPATIENTS AND NURSING HOME PATIENTS. 123885 02-10

- DOXEPIN AND AMITRIPTYLINE PERPHENAZINE IN MIXED ANXIOUS DEPRESSED NEUROTIC OUTPATIENTS: A COLLABORATIVE CONTROLLED STUDY. 123933 02-10



## Subject Index

## Psychopharmacology Abstracts

- BENZOTAMINE AND CHLORDIAZEPOXIDE IN ANXIOUS OUTPATIENTS: A COLLABORATIVE STUDY.** 130475 02-10
- CLINICAL EVALUATION OF THE EFFICACY OF MOLINDONE AND CHLORDIAZEPOXIDE IN ANXIOUS OUTPATIENTS.** 132717 02-10
- FLUSPIRILENE IN THE TREATMENT OF CHRONIC SCHIZOPHRENIC OUTPATIENTS.** 132718 02-08
- OUTSIDE**
- MEDICAL CARE OF PSYCHOTROPIC DRUG PROBLEM PATIENTS OUTSIDE HOSPITAL.** 125278 02-17
- OVER-THE-COUNTER**
- IDENTIFICATION AND TREATMENT OF ACUTE PSYCHOTIC STATES SECONDARY TO THE USAGE OF OVER-THE-COUNTER SLEEPING PREPARATIONS.** 120269 02-15
- OVERDOSAGE**
- OVERDOSAGE OF TRICYCLIC ANTIDEPRESSANTS: A REPORT OF TWO DEATHS AND A PROSPECTIVE STUDY OF 24 PATIENTS.** 121976 02-15
- ELECTROENCEPHALOGRAPHIC CORRELATES IN OVERDOSAGE WITH ANTICONVULSIVE DRUGS.** 122330 02-15
- OVERDOSE**
- IDENTIFICATION OF DRUGS TAKEN IN OVERDOSE CASES.** 119022 02-06
- REPORT ON A CASE OF STATUS-PSYCHOMOTRICUS WITH TONIC TWILIGHT ATTACKS IN DRUG OVERDOSE.** 133331 02-15
- OVERREACTION**
- THE EFFECT OF SCOPOLAMINE ON THE KAMIN EFFECT: A TEST OF THE PARASYMPATHETIC OVERREACTION HYPOTHESIS.** 127023 02-04
- OXAFUMAZINE**
- THE NEUROLEPTIC ACTION OF OXAFUMAZINE, PARTICULARLY IN ACUTE PSYCHOSES.** 133626 02-11
- OXAZEPAM**
- BRAIN CONCENTRATIONS OF LORAZEPAM AND OXAZEPAM AT EQUAL DEGREE OF ANTICONVULSANT ACTIVITY.** 119302 02-03
- DISRUPTION OF A TEMPORAL DISCRIMINATION BY THE MINOR TRANQUILIZER, OXAZEPAM.** 119982 02-04
- AN OBSERVATION OF OXAZEPAM DEPENDENCY.** 121596 02-10
- OXAZEPAM IN THE TREATMENT OF NEUROTIC DISTURBANCES AS WELL AS IN THE WITHDRAWAL MANAGEMENT OF ALCOHOLICS AND DRUG ADDICTS.** 121600 02-10
- FALSE GLUCOSE VALUES WITH USE OF OXAZEPAM.** 126339 02-15
- THE EFFECT OF OXAZEPAM ON INTERRUPTED DAY SLEEP AFTER NIGHT WORK.** 132785 02-14
- A CASE OF EARLY OXAZEPAM ADDICTION TREATED IN THE OUTPATIENT CLINIC.** 133450 02-15
- OXAZOLAM**
- A DOUBLE-BLIND CONTROLLED TRIAL OF PSYCHOTROPIC DRUG OXAZOLAM ON NEUROTICS, WITH SPECIAL REFERENCE TO ITS HYPNOTIC EFFECT.** 130068 02-10
- OXIDASE**
- SEROTONIN SYNTHESIS WITH RAT BRAIN SYNAPTOSOMES: EFFECTS OF SEROTONIN AND MONOAMINE OXIDASE INHIBITORS.** 119055 02-03
- EFFECTS OF MONOAMINE OXIDASE INHIBITORS ON THE COPULATORY BEHAVIOR OF MALE RATS.** 120009 02-04
- HARMINE TREMOR AFTER BRAIN MONOAMINE OXIDASE INHIBITION IN THE MOUSE.** 120236 02-03
- HUMAN BRAIN MONOAMINE OXIDASE: MULTIPLE FORMS AND SELECTIVE INHIBITORS.** 120939 02-13
- MIXED FUNCTION OXIDASE AND ETHANOL METABOLISM IN PERFUSED RAT LIVER.** 121546 02-03
- MONOAMINE OXIDASE INHIBITORS.** 122405 02-15
- SUBSTRATE SELECTIVE AND TISSUE SELECTIVE INHIBITION OF MONOAMINE OXIDASE.** 133212 02-03
- THE EFFECT OF TRANSAMINE ON THE MONOAMINE OXIDASE ACTIVITY AND PSYCHONEURAL BEHAVIOR IN RATS IN A LABYRINTH.** 133674 02-04
- OXIDATION**
- INHIBITION OF CATECHOLAMINE OXIDATION BY INDOLES.** 121357 02-03
- OXIDATION AND GLUCURONIDATION OF CERTAIN DRUGS IN VARIOUS SUBCELLULAR FRACTIONS OF RAT LIVER: BINDING OF DESMETHYLIMIPRAMINE AND HEXOBARBITAL TO CYTOCHROME-P-450 AND OXIDATION AND GLUCURONIDATION OF DESMETHYLIMIPRAMINE, AMINOPYRINE, P-NITROPHENOL AND 1-NAPHTHOL.** 124120 02-03
- ETHANOL METABOLISM IN VIVO AND THE ROLE OF HEPATIC MICROSOMAL ETHANOL OXIDATION.** 133605 02-03
- SUBSTITUTED 3,4,5 TRIMETHOXYBENZAMIDES: CORRELATION BETWEEN INHIBITION OF PYRUVIC ACID OXIDATION AND ANTICONVULSANT ACTIVITY.** 133745 02-03
- OXIDATIVE**
- ALLEVIATION OF BARBITURATE INHIBITION ON THE OXIDATIVE ACTIVITY OF SUBMITOCHONDRIAL PARTICLES BY ALKALI.** 122230 02-03
- OXIDIZED**
- 5,6 DIHYDROXYINDOLE FORMATION FROM OXIDIZED 6-HYDROXYDOPAMINE.** 122237 02-03
- OXOTREMORINE**
- THE EFFECTS OF SOME BETA ADRENERGIC BLOCKING AGENTS ON THE CENTRAL AND PERIPHERAL ACTIONS OF TREMORINE AND OXOTREMORINE.** 132759 02-03
- P-CHLOROAMPHETAMINE**
- P-CHLOROAMPHETAMINE - INHIBITION OF CEREBRAL TRYPTOPHAN HYDROXYLASE.** 121354 02-03
- P-CHLOROPHENYLALANINE**
- CENTRAL NERVOUS SYSTEM MECHANISMS RESPONSIBLE FOR BLOOD PRESSURE ELEVATION INDUCED BY P-CHLOROPHENYLALANINE.** 119161 02-03
- FURTHER STUDIES IN CATS CHRONICALLY TREATED WITH P-CHLOROPHENYLALANINE (PCPA).** 119391 02-03
- MEASUREMENT OF PHASIC INTEGRATED POTENTIALS (PIP) DURING TREATMENT WITH P-CHLOROPHENYLALANINE (PCPA).** 119394 02-13
- THE EFFECTS OF P-CHLOROPHENYLALANINE ON THE MATING BEHAVIOR OF MALE RATS.** 122036 02-04
- P-NITROPHENOL**
- OXIDATION AND GLUCURONIDATION OF CERTAIN DRUGS IN VARIOUS SUBCELLULAR FRACTIONS OF RAT LIVER: BINDING OF DESMETHYLIMIPRAMINE AND HEXOBARBITAL TO CYTOCHROME-P-450 AND OXIDATION AND GLUCURONIDATION OF DESMETHYLIMIPRAMINE, AMINOPYRINE, P-NITROPHENOL AND 1-NAPHTHOL.** 124120 02-03
- PAIRED**
- EFFECT OF MORPHINE DOSE SIZE ON THE CONDITIONED REINFORCING POTENCY OF STIMULI PAIRED WITH MORPHINE.** 126906 02-04
- PALLIDAL**
- PALLIDAL AND TEGMENTAL INHIBITION OF OSCILLATORY SLOW WAVES AND UNIT ACTIVITY IN THE SUBTHALAMIC NUCLEUS.** 122204 02-03
- PARADOXICAL**
- THE RESPECTIVE INVOLVEMENT OF NORADRENALINE AND ITS DEAMINATED METABOLITES IN WAKING AND PARADOXICAL SLEEP: A NEUROPHARMACOLOGICAL MODEL.** 119683 02-03
- STUDIES ON THE PARADOXICAL INTERACTION OF PHYSOSTIGMINE AND PENTOBARBITAL ON REGIONAL BRAIN ACETYLCHOLINE CONTENT OF VARIOUS ANIMAL SPECIES.** 121296 02-03
- HYPERKINETIC ADULT: STUDY OF THE PARADOXICAL AMPHETAMINE RESPONSE.** 128875 02-11
- PARALDEHYDE**
- ETHANOL PREFERENCE IN THE RAT: INTERACTIONS BETWEEN BRAIN SEROTONIN AND ETHANOL, ACETALDEHYDE, PARALDEHYDE, 5-HTP AND 5-HTOL.** 132682 02-04
- PARAMETERS**
- EFFECTS OF TWO ANTIDEPRESSANTS UPON CONCEPT LEARNING: PSYCHOPHYSIOLOGICAL PARAMETERS IN DEPRESSED HUMANS.** 134850 02-08

- PARANOID**  
AUDITORY SIGNAL DETECTION IN PARANOID AND NONPARANOID SCHIZOPHRENICS. 129838 02-08
- PARASYMPATHETIC**  
THE EFFECT OF SCOPOLAMINE ON THE KAMIN EFFECT: A TEST OF THE PARASYMPATHETIC OVERREACTION HYPOTHESIS. 127023 02-04  
THE MICROELECTROPHORETIC ADMINISTRATION OF NORADRENALINE, 5-HYDROXYTRYPTAMINE, ACETYLCHOLINE AND GLYCINE TO SACRAL PARASYMPATHETIC PREGANGLIONIC NEURONS. 132153 02-03
- PARENTERAL**  
ORAL AND PARENTERAL FORMULATIONS OF MARIJUANA CONSTITUENTS. 121284 02-06  
COMPARATIVE STUDY OF PARENTERAL DOXEPIN AND DIAZEPAM. 121597 02-10
- PARKINSON**  
TREMOR INHIBITION IN PARKINSON SYNDROME AFTER APOMORPHINE ADMINISTRATION UNDER L-DOPA AND DECARBOXYLASE INHIBITOR BASIC THERAPY. 133262 02-11  
THE ADVANTAGES OF THE COMBINATION TREATMENT (L-DOPA AND DECARBOXYLASE INHIBITOR) IN THE PARKINSON SYNDROME. 133518 02-11
- PARKINSONIAN**  
PERSPECTIVES OF PARKINSONIAN THERAPY WITH L-DOPA. 122083 02-11  
A DOUBLE-BLIND COMPARISON OF THE EFFICACY OF EX-10-029 AND TRIHEXYPHENIDYL HYDROCHLORIDE IN RELIEVING DRUG-INDUCED PARKINSONIAN SYMPTOMS. 132956 02-07  
PARKINSONS TREMOR, RELIEF BY AN ANTIAMINIC DRUG (BC-105): DISCUSSION ON THE BIOCHEMICAL PATHOGENESIS OF PARKINSONIAN TREMOR. 133517 02-11  
INFLUENCE OF L-DOPA ON NIGHT SLEEP IN PARKINSONIAN PATIENTS. 133569 02-03
- PARKINSONIANS**  
EFFECT OF L-DOPA ON ELECTROMYOGRAPH AND HEART RATE OF PARKINSONIANS. 119246 02-13  
A PRELIMINARY STUDY OF SELECTED EMOTIONAL CHANGES IN PARKINSONIANS ON L-DOPA THERAPY. 125809 02-14
- PARKINSONISM**  
L-DOPA IN PARKINSONISM: A POSSIBLE MECHANISM OF ACTION. 119030 02-03  
CARBON MONOXIDE INDUCED PARKINSONISM. 122172 02-11  
NICOTINAMIDE INEFFECTIVE IN PARKINSONISM. 122445 02-11  
COMMENTS ON THE ADVERSE EFFECT OF CONCURRENT PYRIDOXINE ADMINISTRATION ON THE EFFICACY OF L-DOPA IN TREATING PARKINSONISM. 133097 02-13  
CEREBRAL AND PERIPHERAL UTILIZATION OF L-DOPA IN PATIENTS WITH PARKINSONISM, DEPRESSIVE OR MANIC SYNDROMES UNDER L-DOPA PERFUSION WITH OR WITHOUT A DECARBOXYLASE INHIBITOR. 133175 02-13
- PARKINSONS**  
LIVIDO-RETICULARIS IN PARKINSONS DISEASE PATIENTS TREATED WITH AMANTADINE HYDROCHLORIDE. 119028 02-15  
TREATMENT OF PARKINSONS DISEASE WITH AMANTADINE AND L-DOPA. 121175 02-15  
SEROTONERGIC MECHANISMS IN PARKINSONS DISEASE. 122255 02-14  
TREATMENT OF PARKINSONS DISEASE WITH AMANTADINE (SYMMETREL). 130020 02-11  
AMANTADINE IN PARKINSONS DISEASE: REVIEW OF MORE THAN TWO YEARS EXPERIENCE. 131948 02-11  
TREATMENT OF PARKINSONS DISEASE WITH VIREGYT (AMANTADINE HYDROCHLORIDE). 132805 02-07  
THE EFFECT OF DIPHENYLHYDANTOIN ON THE CLINICAL MANIFESTATIONS AND EXCRETION OF 5-HYDROXYINDOLEACETIC ACID IN PARKINSONS DISEASE. 132808 02-11  
USE OF HYDROCHLORHYDRATE OF AMANTADINE IN PARKINSONS SYNDROME. 132986 02-11  
A QUALITATIVE AND QUANTITATIVE EVALUATION OF AMANTADINE IN THE TREATMENT OF PARKINSONS DISEASE. 133071 02-11
- TREATMENT OF PARKINSONS DISEASE WITH L-DOPA AND DECARBOXYLASE INHIBITOR. 133198 02-13  
PARKINSONS TREMOR, RELIEF BY AN ANTIAMINIC DRUG (BC-105): DISCUSSION ON THE BIOCHEMICAL PATHOGENESIS OF PARKINSONIAN TREMOR. 133517 02-11  
LEVODOPA COMBINED WITH PERIPHERAL DECARBOXYLASE INHIBITION IN PARKINSONS DISEASE. 133807 02-13
- PARTIAL**  
PARTIAL ANTAGONISM OF THE BEHAVIOURAL AND NEUROCHEMICAL EFFECTS OF PHENCYCLIDINE BY DRUGS AFFECTING MONOAMINE METABOLISM. 120794 02-04
- PARTICLES**  
ALLEVIATION OF BARBITURATE INHIBITION ON THE OXIDATIVE ACTIVITY OF SUBMITOCHONDRIAL PARTICLES BY ALKALI. 122230 02-03
- PASPERTIN**  
PASPERTIN (METOCLOPRAMIDE) AS A CAUSE OF DYSTONIC HYPERKINETIC SYNDROME IN CHILDREN. 132901 02-15
- PASSAGE**  
PASSAGE OF 3H-CHLORPROMAZINE AND 3H-DELTA9-TETRAHYDROCANNABINOL INTO THE HAIR (FUR) OF VARIOUS MAMMALS. 123033 02-03
- PASSIVE**  
ADRENALINE OR PERIPHERAL NORADRENALINE DEPLETION AND PASSIVE AVOIDANCE IN THE RAT. 122059 02-03  
EFFECTS OF CHLORDIAZEPOXIDE ON PASSIVE AVOIDANCE RESPONSES IN RATS. 123939 02-04
- PATHOGENESIS**  
ON THE PROBLEM OF DRUG PATHOGENESIS. 133083 02-10  
PARKINSONS TREMOR, RELIEF BY AN ANTIAMINIC DRUG (BC-105): DISCUSSION ON THE BIOCHEMICAL PATHOGENESIS OF PARKINSONIAN TREMOR. 133517 02-11
- PATIENT**  
WHICH ANTIDEPRESSANT FOR WHICH PATIENT? 119762 02-09  
PSYCHOTROPIC DRUGS AND THE ELDERLY PATIENT. 121780 02-15  
RELATIONSHIP OF PATIENT BACKGROUND CHARACTERISTICS TO EFFICACY OF PHARMACOTHERAPY IN DEPRESSION. 125968 02-10  
CATECHOLAMINE METABOLISM IN AFFECTIVE DISORDERS: A LONGITUDINAL STUDY OF A PATIENT TREATED WITH AMITRIPTYLINE AND ECT. 130109 02-09  
MULTIPLE REGRESSION TECHNIQUES IN PREDICTING PATIENT RESPONSE TO PSYCHOPHARMACOLOGIC DRUGS. 133644 02-16
- PATIENTS**  
A CLINICAL TRIAL OF BENZAZEPINE (SCH-12679) IN ACUTE SCHIZOPHRENIC PATIENTS. 118986 02-08  
LIVIDO-RETICULARIS IN PARKINSONS DISEASE PATIENTS TREATED WITH AMANTADINE HYDROCHLORIDE. 119028 02-15  
SPASMODIC TORTICOLLIS AND L-DOPA: RESULTS OF THERAPEUTIC TRIAL IN SIX PATIENTS. 119029 02-13  
THE USE OF A SIMPLE TEST OF ATTENTION AS A MEASURE OF DRUG EFFECTS IN SCHIZOPHRENIC PATIENTS. 120085 02-08  
THE EFFECTS OF DRUGS ON OBJECTIVE MEASURES OF THOUGHT DISORDER IN SCHIZOPHRENIC PATIENTS. 120120 02-08  
COMPARATIVE TRIAL OF LOW DOSE HALOPERIDOL AND FLUPHENAZINE IN OFFICE PATIENTS. 120727 02-07  
THE PREVALENCE OF TARDIVE DYSKINESIAS IN MENTAL HOSPITAL PATIENTS. 120729 02-15  
CONTROL OF BEHAVIORAL SYMPTOMS IN PATIENTS WITH LONG-TERM ILLNESS. 120730 02-14  
EDEMA AND INCREASED PLASMA RENIN ACTIVITY IN LITHIUM TREATED PATIENTS. 120822 02-09  
COMPARISON OF THE CLINICAL AND ELECTROENCEPHALOGRAPHICAL EFFECTS OF MOLINDONE AND TRIFLUOPERAZINE IN ACUTE SCHIZOPHRENIC PATIENTS. 120824 02-08

## Subject Index

- PART 2. IMPROVEMENT CRITERIA IN DRUG TRIALS WITH NEUROTIC PATIENTS. 121406 02-10
- THE EFFECTS OF PHENOBARBITAL ON BILE SALTS AND BILIRUBIN IN PATIENTS WITH INTRAHEPATIC AND EXTRAHEPATIC CHOLESTASIS. 121580 02-13
- A DOUBLE-BLIND INVESTIGATION OF A NEW SOPORIFIC DRUG FOR USE WITH DEPRESSIVE PATIENTS. 121599 02-10
- OVERDOSAGE OF TRICYCLIC ANTIDEPRESSANTS: A REPORT OF TWO DEATHS AND A PROSPECTIVE STUDY OF 24 PATIENTS. 121976 02-15
- A COMPARATIVE EVALUATION OF TWO HYPNOTIC AGENTS IN GENERAL PRACTICE PATIENTS WITH INSOMNIA. 122430 02-07
- MAINTENANCE PSYCHOTROPIC DRUGS IN THE PRESENCE OF ACTIVE TREATMENT PROGRAMS: A TRIPLE-BLIND WITHDRAWAL STUDY WITH LONG-TERM MENTAL PATIENTS. 122705 02-11
- TONIC STATUS-EPILEPTICUS PRECIPITATED BY INTRAVENOUS BENZODIAZEPINE IN FIVE PATIENTS WITH LENNOX-GASTAUT SYNDROME. 123636 02-13
- BUTISOL SODIUM VS. LIBRIUM AMONG GERIATRIC AND YOUNGER OUTPATIENTS AND NURSING HOME PATIENTS. 123885 02-10
- THE EFFECTS OF ELECTROSHOCK THERAPY, LITHIUM AND TRICYCLIC ANTIDEPRESSANT TREATMENT ON PROBENECID INDUCED ACCUMULATIONS OF CSF AMINE METABOLITES IN DEPRESSED PATIENTS. (UNPUBLISHED PAPER). 125200 02-09
- MEDICAL CARE OF PSYCHOTROPIC DRUG PROBLEM PATIENTS OUTSIDE HOSPITAL. 125278 02-17
- FIELD DEPENDENCE IN MANIC-DEPRESSIVE PATIENTS. 125967 02-09
- IN VIVO METABOLISM OF CHLORPROMAZINE IN SCHIZOPHRENIC PATIENTS. 126709 02-13
- A CONTROLLED STUDY OF THE EFFICACY OF PENTYLENETETRAZOL (METRAZOL) WITH HARD-CORE HOSPITALIZED PSYCHOGERIATRIC PATIENTS. 127184 02-11
- CATECHOLAMINE METABOLISM IN AFFECTIVE DISORDERS - IV. PRELIMINARY STUDIES OF NOREPINEPHRINE METABOLISM IN DEPRESSED PATIENTS TREATED WITH AMITRIPTYLINE. 127215 02-09
- THE CONSEQUENCES OF PSYCHOTHERAPY FOR SCHIZOPHRENIC PATIENTS. 128408 02-08
- A CLINICAL STUDY OF MESORIDAZINE AND CHLORPROMAZINE IN RELAPSED SCHIZOPHRENIC PATIENTS. 130474 02-08
- NICOTINIC ACID, THIORIDAZINE, FLUOXYMESTERONE AND THEIR COMBINATIONS IN HOSPITALIZED GERIATRIC PATIENTS: A SYSTEMATIC CLINICAL STUDY. 130668 02-11
- A DOUBLE-BLIND SEQUENTIAL COMPARISON OF DOXEPIN WITH AMITRIPTYLINE IN DEPRESSED PATIENTS. 131344 02-09
- THE EFFECT OF AMITRIPTYLINE MEDICATION ON DEPRESSED DIABETIC PATIENTS. 131814 02-13
- DRUG AND SOCIOTHERAPY IN THE AFTERCARE OF SCHIZOPHRENIC PATIENTS: ONE-YEAR RELAPSE RATES. 131963 02-08
- RELATIONSHIPS BETWEEN SERUM AND CEREBROSPINAL FLUID ANTICONVULSANT DRUG AND FOLIC ACID CONCENTRATIONS IN EPILEPTIC PATIENTS. 132710 02-13
- THE USE OF A FIXED DOSAGE COMBINATION OF AMITRIPTYLINE AND CHLORDIAZEPOXIDE IN THE TREATMENT OF PATIENTS SUFFERING FROM ANXIETY AND DEPRESSION. 132754 02-09
- CLINICAL TRIAL OF AMOXAPINE (CL-67772) WITH DEPRESSED PATIENTS. 132895 02-07
- MORTALITY RATE IN PATIENTS RECEIVING DIET PILLS. 132959 02-15
- BEHAVIORAL CHANGES OF CHRONIC SCHIZOPHRENIC PATIENTS GIVEN L-5-HYDROXYTRYPTOPHAN. 132977 02-08
- BEHAVIORAL AND METABOLIC EFFECTS OF L-TRYPTOPHAN IN UNIPOLAR DEPRESSED PATIENTS. (UNPUBLISHED PAPER) 132989 02-09
- CEREBRAL AND PERIPHERAL UTILIZATION OF L-DOPA IN PATIENTS WITH PARKINSONISM, DEPRESSIVE OR MANIC SYNDROMES UNDER L-DOPA PERFUSION WITH OR WITHOUT A DECARBOXYLASE INHIBITOR. 133175 02-13

## Psychopharmacology Abstracts

- PIMOZIDE: A COMPARATIVE STUDY IN THE TREATMENT OF CHRONIC SCHIZOPHRENIC PATIENTS. 133220 02-07
- EXCRETION OF VANILLYL-MANDELIC ACID, HOMOVANILLIC ACID, N-METHYL-NICOTINAMIDE, AND N-METHYL-2-PYRIDONE-5-CARBOXAMIDE IN URINE OF VOLUNTARY TEST PERSONS AND PSYCHIATRIC PATIENTS BEFORE AND AFTER ADMINISTRATION OF METHIONINE. 133265 02-13
- THE EFFECT OF NEUROLEPTIC DRUGS ON CEPHALIC CIRCULATION IN ELDERLY PSYCHIATRIC PATIENTS. 133353 02-11
- THE ELECTRIC INTERPHASIC BLOOD POTENTIAL FOR SODIUM AND POTASSIUM IONS IN PATIENTS TREATED WITH CHLORPROMAZINE FOR VARIOUS MENTAL DISORDERS. 133463 02-13
- INFLUENCE OF L-DOPA ON NIGHT SLEEP IN PARKINSONIAN PATIENTS. 133569 02-03
- GP-45795: A CONTROLLED EVALUATION IN CHRONIC SCHIZOPHRENIC PATIENTS. 134197 02-08
- LITHIUM, WEIGHT GAIN, AND SERUM INSULIN IN MANIC-DEPRESSIVE PATIENTS. 134310 02-15
- A CONTROLLED STUDY ON THE POSSIBLE EFFECT OF DIHYDROERGOTAMINE AGAINST DRYNESS OF THE MOUTH IN PATIENTS TREATED WITH TRICYCLIC ANTIDEPRESSANTS. 134312 02-13
- PATTERN**  
THE CHANGE OF BEHAVIOR PATTERN OF ALCOHOL ADDICTS TREATED WITH CYANAMIDE DOUBLE MEDICATION - OBSERVATIONS BY THEIR FAMILIES. 129088 02-11
- PATTERNS**  
TIME DRUG MODULATIONS OF PHOTICALLY EVOKED AFTER-DISCHARGE PATTERNS. 122062 02-03
- PCPA**  
FURTHER STUDIES IN CATS CHRONICALLY TREATED WITH P-CHLOROPHENYLALANINE (PCPA). 119391 02-03  
MEASUREMENT OF PHASIC INTEGRATED POTENTIALS (PIP) DURING TREATMENT WITH P-CHLOROPHENYLALANINE (PCPA). 119394 02-13
- PELECYPHORA**  
PEYOTE ALKALOIDS: IDENTIFICATION IN THE MEXICAN CACTUS PELECYPHORA ASELLIFORMIS EHRENBERG. 132873 02-01
- PEMOLINE**  
MAGNESIUM PEMOLINE: EFFECTS OF A BROAD RANGE OF DOSES ON WATER MAZE PERFORMANCE. 120018 02-04  
DEPRESSION OF SPONTANEOUS ACTIVITY IN GOLDFISH BY MAGNESIUM PEMOLINE. 122957 02-04
- PENFLURIDOL**  
CONTROLLED TRIAL OF PENFLURIDOL IN ACUTE PSYCHOSIS. 122885 02-08  
INTERACTION BETWEEN NEUROLEPTIC THERAPY AND SOCIO THERAPEUTIC APPROACH: AN INVESTIGATION WITH PENFLURIDOL AND HALOPERIDOL. 133355 02-08  
FLUSPIRILENE, AN INJECTABLE, AND PENFLURIDOL, AN ORAL LONG-LASTING, NEUROLEPTIC. 134309 02-08
- PENICILLIN**  
PENICILLIN INDUCED SEIZURE ACTIVITY IN THE HATCHET FISH. 121966 02-03  
CONVULSIVE ACTION OF PENICILLIN. 121967 02-03
- PENTAZOCINE**  
SOME ACTIONS OF PENTAZOCINE ON BEHAVIOR AND BRAIN MONOAMINES IN THE RAT. 124333 02-03
- PENTOBARBITAL**  
MICROSOMAL PENTOBARBITAL HYDROXYLASE ACTIVITY IN ACUTE VIRAL HEPATITIS. 121288 02-15  
STUDIES ON THE PARADOXICAL INTERACTION OF PHYSOSTIGMINE AND PENTOBARBITAL ON REGIONAL BRAIN ACETYLCHOLINE CONTENT OF VARIOUS ANIMAL SPECIES. 121296 02-03  
EFFECT OF CARBARYL (1-NAPHTHYL-N-METHYLCARBAMATE) ON PENTOBARBITAL INDUCED SLEEPING TIME AND SOME LIVER MICROSOMAL ENZYMES IN WHITE LEGHORN COCKERELS. 121836 02-03  
RELATIVE POTENCY OF TRICHLOROFOS COMPARED TO PENTOBARBITAL AS A HYPNOTIC. 121985 02-07

- EFFECTS OF PENTOBARBITAL ON THE VISUAL EVOKED RESPONSE IN THE AVIAN OPTIC TECTUM. 122012 02-03
- THE EFFECT OF ALTERING LIVER MICROSOMAL CO-BINDING MEMOPROTEIN COMPOSITION ON PENTOBARBITAL INDUCED ANESTHESIA. 122096 02-03
- PROLONGED METABOLISM OF PENTOBARBITAL IN ISOLATED PERFUSED LIVER OF TUMOR BEARING RATS. 122167 02-03
- EFFECT OF MATERNALLY INJECTED SODIUM PENTOBARBITAL DURING THE EMBRYONIC PERIOD OF GESTATION ON LIVER GLYCOGEN LEVELS IN THE RAT FETUS. 122236 02-03
- ALTERATIONS BY CENTRALLY ACTING DRUGS OF THE SUPPRESSION OF SELF-STIMULATION BEHAVIOR IN THE RAT BY TETRABENAZINE, PHYSOSTIGMINE, CHLORPROMAZINE AND PENTOBARBITAL. 133473 02-04
- STUDIES ON THE INDUCTION OF SERUM HEMOPEXIN BY PENTOBARBITAL AND POLYCYCLIC HYDROCARBONS. 133733 02-03
- PENTOBARSITONE**
- INHIBITION BY ETHYLMORPHINE AND PENTOBARSITONE IN VITRO OF THE METABOLISM OF (UREYL-14C)TOLBUTAMIDE BY HEPATIC MICROSOMAL PREPARATIONS FROM MALE AND FEMALE RATS TREATED WITH PHENOBARSITONE. 121181 02-03
- PENTOBARSITONE SLEEPING TIME AFTER HALOPERIDOL AND PROMETHAZINE. 133305 02-03
- PENTYLENETETRAZOL**
- TWENTY-FOUR HOUR PROACTIVE FACILITATION OF AVOIDANCE AND DISCRIMINATION BY PENTYLENETETRAZOL. 120016 02-04
- A CONTROLLED STUDY OF THE EFFICACY OF PENTYLENETETRAZOL (METRAZOL) WITH HARD-CORE HOSPITALIZED PSYCHOGERIATRIC PATIENTS. 127184 02-11
- ANTAGONISM OF PENTYLENETETRAZOL EXCITATION BY ANTICONSULSANTS ON SINGLE BRAIN STEM NEURONS. 132676 02-03
- PERAZINE**
- ACCUMULATION AND ELIMINATION OF A NOVEL METABOLITE DURING CHRONIC ADMINISTRATION OF THE PHENOTHIAZINE DRUG PERAZINE TO RATS. 121198 02-03
- PERAZINE AND IMIPRAMINE CONTENT IN THE TISSUES OF RATS OF DIFFERENT AGES. 133352 02-03
- PERCEPTION**
- THE STABILITY AND SENSITIVITY OF MEASURES OF THOUGHT, PERCEPTION AND EMOTIONAL AROUSAL. 120118 02-08
- PERFORMANCE**
- MAGNESIUM PEMOLINE: EFFECTS OF A BROAD RANGE OF DOSES ON WATER MAZE PERFORMANCE. 120018 02-04
- PERFORMANCE TESTS IN A STUDY OF PHENOTHIAZINES IN SCHIZOPHRENIA: CAVEATS AND CONCLUSIONS. 120084 02-08
- EFFECTS OF ATROPINE ON PERFORMANCE OF AN S(D)-S(DELTA)A DISCRIMINATION IN RATS. 120103 02-04
- ACQUISITION AND PERFORMANCE EFFECTS OF SCOPOLAMINE AND OF TREATMENT WITHDRAWAL IN AVOIDANCE SITUATIONS. 122039 02-04
- PROACTIVE EFFECT OF ACTINOMYCIN D ON MAZE PERFORMANCE IN THE RAT. 122058 02-04
- EFFECTS OF ATROPINE SULPHATE ON REPEATED EXTINCTION PERFORMANCE IN HIPPOCAMPECTOMIZED RATS. 123936 02-04
- NEUROPSYCHOLOGICAL TEST PERFORMANCE BEFORE AND AFTER SYMPTOM REMOVAL IN A CHILD WITH GILLES-DE-LA-TOURETTE SYNDROME. 125802 02-14
- SOME EFFECTS OF (-) DELTA9-TRANS-TETRAHYDROCANNABINOL ON DELAYED MATCHING TO SAMPLE PERFORMANCE IN CHIMPANZEES. (UNPUBLISHED PAPER). 126242 02-04
- THE DEVELOPMENT OF FIXED-RATIO PERFORMANCE UNDER THE INFLUENCE OF RIBONUCLEIC ACID. 129423 02-04
- EFFECTS OF DEXTROAMPHETAMINE, CHLORPROMAZINE, AND HYDROXYZINE ON BEHAVIOR AND PERFORMANCE IN HYPERACTIVE CHILDREN. 129494 02-11
- ENHANCEMENT OF SWIMMING PERFORMANCE WITH DELTA9-TETRAHYDROCANNABINOL. 131283 02-04
- BIPHASIC EFFECTS OF DELTA9-TETRAHYDROCANNABINOL ON VARIABLE INTERVAL SCHEDULE PERFORMANCE IN RATS. (UNPUBLISHED PAPER) 133171 02-04
- ENHANCEMENT OF PROGRESSIVE-RATIO PERFORMANCE BY CHLORDIAZEPOXIDE AND PHENOBARBITAL. 133725 02-04
- PERFUSED**
- MIXED FUNCTION OXIDASE AND ETHANOL METABOLISM IN PERFUSED RAT LIVER. 121546 02-03
- PROLONGED METABOLISM OF PENTOBARBITAL IN ISOLATED PERFUSED LIVER OF TUMOR BEARING RATS. 122167 02-03
- PERFUSION**
- CEREBRAL AND PERIPHERAL UTILIZATION OF L-DOPA IN PATIENTS WITH PARKINSONISM, DEPRESSIVE OR MANIC SYNDROMES UNDER L-DOPA PERFUSION WITH OR WITHOUT A DECARBOXYLASE INHIBITOR. 133175 02-13
- PERIPHERAL**
- EFFECTS OF PERIPHERAL AROMATIC L-AMINO ACIDS DECARBOXYLASE INHIBITOR ON L-(2-14C)-3,4 DIHYDROXYPHENYLALANINE METABOLISM IN MAN. 121301 02-11
- ADRENALINE OR PERIPHERAL NORADRENALINE DEPLETION AND PASSIVE AVOIDANCE IN THE RAT. 122059 02-03
- PHARMACOLOGICAL STUDY OF HYDROGENATED RUGULOVASINE A AND B HYDROCHLORIDES: CENTRAL AND PERIPHERAL ACTIONS. 130912 02-03
- THE EFFECTS OF SOME BETA ADRENERGIC BLOCKING AGENTS ON THE CENTRAL AND PERIPHERAL ACTIONS OF TREMORINE AND OXOTREMORINE. 132759 02-03
- CEREBRAL AND PERIPHERAL UTILIZATION OF L-DOPA IN PATIENTS WITH PARKINSONISM, DEPRESSIVE OR MANIC SYNDROMES UNDER L-DOPA PERFUSION WITH OR WITHOUT A DECARBOXYLASE INHIBITOR. 133175 02-13
- CENTRAL AND PERIPHERAL ACTIONS OF THE ACETYLCHOLINE ANTAGONIST, AMBUTONIUM BROMIDE. 133299 02-03
- LEVODOPA COMBINED WITH PERIPHERAL DECARBOXYLASE INHIBITION IN PARKINSON'S DISEASE. 133807 02-13
- PERMANENT**
- PERMANENT FACILITATION OF AVOIDANCE BEHAVIOR BY D-AMPHETAMINE AND SCOPOLAMINE. 133377 02-04
- PERMEABILITY**
- EFFECTS OF PSYCHOTROPIC DRUGS ON THE ERYTHROCYTE PERMEABILITY TO GLUCOSE AND ETHYLENE GLUCOSE. 121402 02-03
- TEMPORARY ALTERATION OF CEREBROVASCULAR PERMEABILITY TO PLASMA PROTEIN DURING DRUG-INDUCED SEIZURES. 122177 02-03
- PERPHENAZINE**
- DOXEPIN AND AMITRIPTYLINE PERPHENAZINE IN MIXED ANXIOUS DEPRESSED NEUROTIC OUTPATIENTS: A COLLABORATIVE CONTROLLED STUDY. 123933 02-10
- TREATMENT OF CHOREIC MOVEMENTS WITH PERPHENAZINE. 128336 02-11
- USE OF PERPHENAZINE IN PSYCHIATRIC EMERGENCIES: THE CONCEPT OF CHEMICAL RESTRAINT. 132957 02-17
- PRELIMINARY STUDY OF PERPHENAZINE ENANTHATE IN THE TREATMENT OF CHRONIC SCHIZOPHRENIA. 133261 02-07
- COMPARISON OF PERPHENAZINE (TRILAFON TABLETS) WITH PERPHENAZINE ENANTHATE (TRILAFON DEPOT INJECTION) IN A DOUBLE-BLIND TRIAL. 133351 02-08
- PERSISTENT**
- PERSISTENT DYSKINESIAS IN DRUG USERS. 120733 02-15
- PERSONALITY**
- STRENGTH OF THE NERVOUS SYSTEM AS A FUNCTION OF PERSONALITY TYPE AND LEVEL OF AROUSAL. 119068 02-14
- LSD: PERSONALITY AND EXPERIENCE. 120479 02-12
- PERSONS**
- EXCRETION OF VANILLYL-MANDELIC ACID, HOMOVANILLIC ACID, N-METHYL-NICOTINAMIDE, AND N-METHYL-2-PYRIDONE-5-CARBOXAMIDE



## Subject Index

- IN URINE OF VOLUNTARY TEST PERSONS AND PSYCHIATRIC PATIENTS BEFORE AND AFTER ADMINISTRATION OF METHIONINE. 133265 02-13
- PERSPECTIVE**  
BIOLOGIC PSYCHIATRY IN PERSPECTIVE: THE DANGERS OF SECTARIANISM IN PSYCHIATRY. V. SOME INFERRED TRENDS. 129401 02-17
- PERSPECTIVES**  
PERSPECTIVES OF PARKINSONIAN THERAPY WITH L-DOPA. 122083 02-11  
PERSPECTIVES IN NEUROPHARMACOLOGY: A TRIBUTE TO JULIUS AXELROD. 133110 02-17
- PETIT-MAL**  
TONIC STATUS-EPILEPTICUS PRECIPITATED BY INTRAVENOUS DIAZEPAM IN A CHILD WITH PETIT-MAL STATUS. 123629 02-13
- PEYOTE**  
PEYOTE AND RELATED ALKALOIDS XIV: MESCALOXYLIC ACID AND MESCALORUVIC ACID, THE NOVEL AMINO ACID ANALOGS OF MESCALINE. 121285 02-01  
PEYOTE ALKALOIDS: IDENTIFICATION IN THE MEXICAN CACTUS PELECYPHORA ASELLIFORMIS EHRENBURG. 132873 02-01
- PGO**  
HYPOTHETICAL ROLE OF DEAMINATED METABOLITES OF NORADRENALINE IN PGO SPIKING AND PS. 119392 02-03  
RELATIONSHIP BETWEEN EXTRAOCULAR AND PGO ACTIVITY IN THE CAT. 119534 02-03
- PHARMACO-ELECTROENCEPHALOGRAPHY**  
QUANTITATIVE PHARMACO-ELECTROENCEPHALOGRAPHY IN THE DISCOVERY OF A NEW GROUP OF PSYCHOTROPIC DRUGS. 130472 02-07
- PHARMACODYNAMIC**  
PHARMACODYNAMIC EFFECTS OF 8-CHLORO-6-PHENYL-4H-5-TRIAZOBENZODIAZEPINE (D-40TA), A NEW CENTRAL DEPRESSANT. 131056 02-02
- PHARMACOKINETICS**  
THE PHARMACOKINETICS OF LITHIUM SALTS IN ACUTE STRAIN TESTS IN HEALTHY SUBJECTS. 133356 02-13
- PHARMACOLOGIC**  
METABOLIC AND PHARMACOLOGIC INTERACTION OF ETHANOL AND METRONIDAZOLE IN THE RAT. 119000 02-03  
BIOCHEMICAL AND PHARMACOLOGIC STUDIES OF HUNTINGTONS CHOREA. (UNPUBLISHED PAPER). 125367 02-11
- PHARMACOLOGICAL**  
SOME PHARMACOLOGICAL PROPERTIES OF THE POLYAMINES SPERMINE AND SPERMININE - A REAPPRAISAL. 122077 02-03  
SOME PHARMACOLOGICAL EFFECTS OF PHENITRONE AND ITS INTERACTION WITH DELTA9-THC. 122242 02-04  
HABITUATION TO LIGHT AND SPONTANEOUS ACTIVITY IN THE ISOLATED SIPHON OF APLYSIA: THE EFFECTS OF SYNAPTICALLY ACTIVE PHARMACOLOGICAL AGENTS. (PH.D. DISSERTATION). 123950 02-04  
BIOCHEMICAL AND PHARMACOLOGICAL VARIATIONS IN MANIC-DEPRESSIVE ILLNESS. 126500 02-09  
PSYCHOBIOLOGICAL AND PHARMACOLOGICAL STUDIES OF MANIC-DEPRESSIVE ILLNESS. 127217 02-09  
FURTHER PHARMACOLOGICAL STUDY ON ANTIAGGRESSIVE, SEDATIVE AND MUSCLE RELAXANT 8-CHLORO-6-PHENYL-4H-5-TRIAZOBENZODIAZEPINE (D-40TA) IN EXPERIMENTAL ANIMALS: COMPARATIVE STUDY ON POTENCY AND DURATION. 130909 02-04  
PHARMACOLOGICAL STUDY OF HYDROGENATED RUGULOVASINE A AND B HYDROCHLORIDES: CENTRAL AND PERIPHERAL ACTIONS. 130912 02-03  
PHARMACOLOGICAL IMPLICATIONS OF THE CHANGES OF BRAIN MONOAMINE TURNOVER RATES ELICITED BY (-) AMPHETAMINE AND SOME CHEMICALLY RELATED COMPOUNDS. (UNPUBLISHED PAPER). 132368 02-03  
SHOCK INDUCED AGGRESSION: EFFECTS OF 6-HYDROXYDOPAMINE AND OTHER PHARMACOLOGICAL AGENTS. 132680 02-04  
CHANGES IN TYROSINE HYDROXYLASE AND DOPA DECARBOXYLASE INDUCED BY PHARMACOLOGICAL AGENTS. 132706 02-03  
MANDRAX: CLINICAL, PHARMACOLOGICAL AND TOXICOLOGICAL ASPECTS: STUDY OF 106 OBSERVATIONS. 132903 02-07

## Psychopharmacology Abstracts

- PHARMACOLOGICAL STUDIES OF NEW INDOLE ALKALOIDS, RUGULOVASINE A AND B HYDROCHLORIDE: 1. EFFECTS OF BOTH ALKALOIDS ON CARDIOVASCULAR AND CENTRAL NERVOUS SYSTEM, AND SMOOTH MUSCLES. 133217 02-02
- SOME PHARMACOLOGICAL AND TOXICOLOGICAL EFFECTS OF 1-TRANS-DELTA9-THC AND 1-TRANS-DELTA9-TETRAHYDROCANNABINOL IN LABORATORY RODENTS. 133290 02-05
- AN INVESTIGATION OF THE PHARMACOLOGICAL PROPERTIES OF HOMOCARNOSINE. 133304 02-02
- PHARMACOLOGICAL STUDIES ON 1-METHYL-7-NITRO-5-PHENYL-1,3-DIHYDRO-2H 1,4-BENZODIAZEPIN-2-ONE (S-1530). 133670 02-02
- PHARMACOLOGICAL INHIBITION OF EATING, DRINKING AND PRANDIAL DRINKING. 133679 02-04
- PHARMACOLOGISTS**  
THE IMPACT OF SCIENTIFIC MODELS ON CLINICAL PSYCHOPHARMACOLOGY: A PHARMACOLOGISTS VIEW. 126940 02-17
- PHARMACOLOGY**  
THE PHARMACOLOGY OF HALLUCINOGENS. 120926 02-13  
SYMPOSIUM: BEHAVIOR MODIFICATION BY DRUGS. I. PHARMACOLOGY OF THE AMPHETAMINES. 121990 02-13  
PHARMACOLOGY OF A NEW BETA-ADRENOCEPTOR BLOCKING AGENT, THE 15219. 122232 02-03  
PHARMACOLOGY AND PSYCHIATRY. 125039 02-17  
THE PHARMACOLOGY OF N,ALPHA-DIMETHYL-N,BETA-CHLOROETHYL-PHENETHYLAMINE. HCL - EFFECTS ON THE AUTONOMIC NERVOUS SYSTEM. 133295 02-03  
CLINICAL PHARMACOLOGY OF 5-HYDROXYTRYPTAMINE AND CATECHOLAMINES VENOMOTOR RECEPTORS. 133749 02-13  
GERIATRIC PHARMACOLOGY. 133857 02-13  
THE PHARMACOLOGY OF TARDIVE DYSKINESIAS. 134120 02-15
- PHARMACOTHERAPY**  
PSYCHOPHARMACOLOGY AND PHARMACOTHERAPY IN PSYCHIATRY. 121940 02-17  
RELATIONSHIP OF PATIENT BACKGROUND CHARACTERISTICS TO EFFICACY OF PHARMACOTHERAPY IN DEPRESSION. 125968 02-10
- PHASIC**  
MEASUREMENT OF PHASIC INTEGRATED POTENTIALS (PIP) DURING TREATMENT WITH P-CHLOROPHENYLALANINE (PCPA). 119394 02-13
- PHENAMINE**  
CHANGES IN THE NEURONS OF CERTAIN SECTIONS OF THE RAT BRAIN DURING MOTOR STIMULATION INDUCED BY PHENAMINE. 133958 02-03
- PHENCYCLIDINE**  
PARTIAL ANTAGONISM OF THE BEHAVIOURAL AND NEUROCHEMICAL EFFECTS OF PHENCYCLIDINE BY DRUGS AFFECTING MONOAMINE METABOLISM. 120794 02-04
- PHENELZINE**  
THE EFFECTS OF MEPERIDINE AND MORPHINE IN RABBITS PRETREATED WITH PHENELZINE. 121179 02-05
- PHENETHYLAMINE**  
PHENETHYLAMINE AS A NEUROHUMORAL AGENT IN BRAIN. 133622 02-03
- PHENITRONE**  
SOME PHARMACOLOGICAL EFFECTS OF PHENITRONE AND ITS INTERACTION WITH DELTA9-THC. 122242 02-04  
PHENITRONE: INEFFECTIVE BLOCKADE OF (-) TRANS-DELTA9-TETRAHYDROCANNABINOL IN MICE AND DOGS. 122448 02-03
- PHENOBARBITAL**  
RELATION BETWEEN DRUG METABOLIZING ACTIVITY AND PHOSPHOLIPIDS IN HEPATIC MICROSOMES. I. EFFECTS OF PHENOBARBITAL, CARBON TETRACHLORIDE, AND ACTINOMYCIN-D. 119001 02-03  
EFFECT OF PRETREATMENT WITH SPIRONOLACTONE, PHENOBARBITAL OR BETA-DIETHYLAMINOETHYL DIPHENYLPROPYL-ACETATE (SKF-525-A) ON TRITIUM LEVELS IN BLOOD, HEART AND LIVER OF RATS AT VARIOUS TIMES AFTER ADMINISTRATION OF 3H-DIGITOXIN. 121243 02-03

- PHENOBARBITAL MEDIATED INCREASE IN RING AND N-HYDROXYLATION OF THE CARCINOGEN N-2-FLUORENYLACETAMIDE, AND DECREASE IN AMOUNTS BOUND TO LIVER DEOXYRIBONUCLEIC ACID. 121265 02-03
- THE EFFECT OF PHENOBARBITAL ON INTESTINAL CALCIUM TRANSPORT. 121286 02-05
- DECREASE OF RIBONUCLEASE ACTIVITY OF ISOLATED RAT LIVER CYTOPLASMIC RIBOSOMES AFTER THE PHENOBARBITAL ADMINISTRATION. 121326 02-03
- THE EFFECTS OF PHENOBARBITAL ON BILE SALTS AND BILIRUBIN IN PATIENTS WITH INTRAHEPATIC AND EXTRAHEPATIC CHOLESTASIS. 121580 02-13
- INCREASED HEPATIC PHOSPHOPROTEIN PHOSPHATASE ACTIVITY INDUCED BY PHENOBARBITAL AND ITS SUPPRESSION BY CYCLOHEXIMIDE AND SKF-525-A. 121647 02-05
- METABOLISM OF DICOUMAROL BY LIVER MICROSOMES FROM UNTREATED AND PHENOBARBITAL TREATED RATS. 122169 02-03
- EFFECT OF PHENOBARBITAL ON A LEECH NEURON. 132678 02-03
- ENHANCEMENT OF PROGRESSIVE-RATIO PERFORMANCE BY CHLORDIAZEPOXIDE AND PHENOBARBITAL. 133725 02-04
- PHENOBARBITONE**
- INHIBITION BY ETHYLMORPHINE AND PENTOBARBITONE IN VITRO OF THE METABOLISM OF (UREYL-14C)TOLBUTAMIDE BY HEPATIC MICROSOMAL PREPARATIONS FROM MALE AND FEMALE RATS TREATED WITH PHENOBARBITONE. 121181 02-03
- PHENOTHIAZINE**
- BROMINATION OF PHENOTHIAZINE TRANQUILIZERS: A METHOD FOR SENSITIVE AND SPECIFIC DETECTION. 119053 02-06
- EFFECTS OF PROLONGED PHENOTHIAZINE INTAKE ON PSYCHOTIC AND OTHER HOSPITALIZED CHILDREN. 119969 02-15
- ACCUMULATION AND ELIMINATION OF A NOVEL METABOLITE DURING CHRONIC ADMINISTRATION OF THE PHENOTHIAZINE DRUG PERAZINE TO RATS. 121198 02-03
- FURTHER CHARACTERIZATION OF A REDUCED NICOTINAMIDE ADENINE DINUCLEOTIDE PHOSPHATE DEPENDENT ALDEHYDE REDUCTASE FROM BOVINE BRAIN: INHIBITION BY PHENOTHIAZINE DERIVATIVES. 121634 02-03
- SLEEP OF SEVEN PHENOTHIAZINE RESISTANT, DRUG-FREE CHRONIC SCHIZOPHRENICS. 124257 02-17
- PREMORBID ADJUSTMENT, PHENOTHIAZINE TREATMENT, AND REMISSION IN ACUTE SCHIZOPHRENICS. 126228 02-08
- THE TREATMENT OF PHENOTHIAZINE INDUCED TACHYCARDIA BY PROPRANOLOL. 128463 02-13
- LOW DOSAGE PHENOTHIAZINE THERAPY: EFFECTIVE ANXIOLYTIC ACTION WITHOUT IMPAIRMENT TO INTELLECTUAL FUNCTION. 132715 02-10
- THE HEMOLYTIC EFFECT OF SOME PHENOTHIAZINE DERIVATIVES IN VITRO AND IN VIVO. 133307 02-13
- THE EFFECTS OF SOME PHENOTHIAZINE DERIVATIVES ON THE BEHAVIOR OF WILD HERRING GULLS. (LARUS A. ARGENTATUS PONTOPP). 133381 02-04
- DEPOT PHENOTHIAZINE TREATMENT IN ACUTE PSYCHOSIS: A SEQUENTIAL COMPARATIVE STUDY. 134112 02-09
- PHENOTHIAZINES**
- EFFECTS OF PHENOTHIAZINES ON AMINO ACID TRANSPORT AND PROTEIN SYNTHESIS IN ISOLATED NERVE ENDINGS. 119056 02-03
- PERFORMANCE TESTS IN A STUDY OF PHENOTHIAZINES IN SCHIZOPHRENIA: CAVEATS AND CONCLUSIONS. 120084 02-08
- PREDICTION OF RESPONSE TO PHENOTHIAZINES IN SCHIZOPHRENIA: A CROSS VALIDATION STUDY. 120698 02-08
- THYROID ACTION ON BEHAVIORAL PHYSIOLOGICAL EFFECTS AND DISPOSITION OF PHENOTHIAZINES. 122238 02-04
- SIDE-EFFECTS OF PHENOTHIAZINES. 122879 02-15
- SIDE-EFFECTS OF PHENOTHIAZINES. 122880 02-15
- SIDE-EFFECTS OF PHENOTHIAZINES. 122881 02-15
- WORK STUDY IN THE ASSESSMENT OF THE EFFECTS OF PHENOTHIAZINES IN SCHIZOPHRENIA. 127856 02-08
- PHENOXYBENZAMINE**
- THE EFFECT OF L-DOPA AND (-) AMPHETAMINE ON THE LOCOMOTOR ACTIVITY AFTER PIMOZIDE AND PHENOXYBENZAMINE. 121317 02-04
- INTERACTIONS OF ANGIOTENSIN, PHENOXYBENZAMINE AND PROPRANOLOL ON NORADRENALINE RELEASE DURING SYMPATHETIC NERVE STIMULATION. 122568 02-03
- PHENTERMINE**
- THE CENTRAL HYPOTENSIVE ACTION OF AMPHETAMINE, EPHEDRINE, PHENTERMINE, CHLORPHENTERMINE AND FENFLURAMINE. 122446 02-03
- THE ANORECTIC EFFECT OF A LONG-ACTING PREPARATION OF PHENTERMINE (DUROMINE). 133472 02-11
- PHENTOLAMINE**
- EFFECTS OF PROPRANOLOL, PHENTOLAMINE AND METHYL ATROPINE ON CARDIOVASCULAR FUNCTION IN THE SQUIRREL MONKEY DURING BEHAVIORAL EXPERIMENTS. 122179 02-03
- PHENYLETHYLAMINE**
- CENTRAL ACTIONS OF 6-HYDROXYDOPAMINE AND OTHER PHENYLETHYLAMINE DERIVATIVES ON BODY TEMPERATURE IN THE RAT. 120362 02-03
- PHENYLPROPRANOLAMINE**
- SYNERGISM BY ATROPINE OF CENTRAL STIMULANT PROPERTIES OF PHENYLPROPRANOLAMINE. 122399 02-03
- PHOBIAS**
- TREATING PHOBIAS - WITH A DRUG. 119612 02-10
- PHOBIC**
- PHOBIC ANXIETY SYNDROME COMPLICATED BY DRUG DEPENDENCE AND ADDICTION. 122663 02-10
- PHOSPHATASE**
- SERUM TRANSAMINASES AND ALKALINE PHOSPHATASE IN SCHIZOPHRENIA. 118934 02-08
- INCREASED HEPATIC PHOSPHOPROTEIN PHOSPHATASE ACTIVITY INDUCED BY PHENOBARBITAL AND ITS SUPPRESSION BY CYCLOHEXIMIDE AND SKF-525-A. 121647 02-05
- PHOSPHATE**
- FURTHER CHARACTERIZATION OF A REDUCED NICOTINAMIDE ADENINE DINUCLEOTIDE PHOSPHATE DEPENDENT ALDEHYDE REDUCTASE FROM BOVINE BRAIN: INHIBITION BY PHENOTHIAZINE DERIVATIVES. 121634 02-03
- PHOSPHODIESTERASE**
- ACTIVATION AND INHIBITION OF LIPOLYSIS IN ISOLATED FAT CELLS BY VARIOUS INHIBITORS OF CYCLIC-AMP PHOSPHODIESTERASE. 124170 02-03
- PHOSPHOLIPIDS**
- RELATION BETWEEN DRUG METABOLIZING ACTIVITY AND PHOSPHOLIPIDS IN HEPATIC MICROSOMES. I. EFFECTS OF PHENOBARBITAL, CARBON TETRACHLORIDE, AND ACTINOMYCIN-D. 119001 02-03
- PHOSPHOPROTEIN**
- INCREASED HEPATIC PHOSPHOPROTEIN PHOSPHATASE ACTIVITY INDUCED BY PHENOBARBITAL AND ITS SUPPRESSION BY CYCLOHEXIMIDE AND SKF-525-A. 121647 02-05
- PHOSPHOROFUORIDATE**
- EFFECT OF DIISOPROPYL PHOSPHOROFUORIDATE (DFP) ON THE SOMATOSENSORY EVOKED POTENTIALS IN RATS. 133380 02-04
- PHOTICALLY**
- TIME DRUG MODULATIONS OF PHOTICALLY EVOKED AFTER-DISCHARGE PATTERNS. 122062 02-03
- PHOTONUCLEOPHILIC**
- PHOTOXICITY AND PHOTONUCLEOPHILIC AROMATIC SUBSTITUTION IN CHLORPROMAZINE. 122246 02-01
- PHOTOXICITY**
- PHOTOXICITY AND PHOTONUCLEOPHILIC AROMATIC SUBSTITUTION IN CHLORPROMAZINE. 122246 02-01
- PHYSICAL**
- INHALATION INDUCED TOLERANCE AND PHYSICAL DEPENDENCE: THE HAZARD OF OPIATE SUFFUSED MARIHUANA. 127693 02-03

# Subject Index

# Psychopharmacology Abstracts

- PHYSICIANS**  
PSYCHOACTIVE MEDICATION AND CONCERN: THE URBAN PHYSICIANS  
PRACTICAL RX FOR NEUROSES. 131345 02-10
- PHYSIOLOGICAL**  
PHYSIOLOGICAL DISPOSITION OF ISOERGINE (FROM ARGYREIA-NERVOSA  
(BURM. F.) BOJER-CONVOLVULACEAE) AND ITS EFFECT ON THE  
CONDITIONED AVOIDANCE RESPONSE IN RATS. 120012 02-03  
THYROID ACTION ON BEHAVIORAL PHYSIOLOGICAL EFFECTS AND  
DISPOSITION OF PHENOTHIAZINES. 122238 02-04  
PSYCHOPATHY AND PHYSIOLOGICAL RESPONSES TO ADRENALIN. 122371 02-11  
TESTING SOME IMPLICATIONS OF THE SENSORY PHYSIOLOGICAL MODEL  
OF THE TIME SENSE. 130354 02-14  
BEHAVIORAL CONTROL OF DRUG METABOLISM AND BODY  
TEMPERATURE: BIOCHEMICAL AND PHYSIOLOGICAL CORRELATES.  
(PH.D. DISSERTATION). 130761 02-03  
ELECTROENCEPHALOGRAM AND BEHAVIOR OF RABBITS IN  
PHYSIOLOGICAL AND DRUG-INDUCED SLEEP; PART II: EEG OF THE  
RABBIT IN DRUG INDUCED SLEEP. 132829 02-04  
ELECTROENCEPHALOGRAM AND BEHAVIOR OF RABBITS IN  
PHYSIOLOGICAL AND DRUG INDUCED SLEEP; PART III: INFLUENCE OF  
HYPNOTICS ON SLEEP BEHAVIOR OF RABBITS; DISCUSSION AND  
SUMMARY. 133672 02-03
- PHYSOSTIGMINE**  
PHYSOSTIGMINE AND 1,1 DIMETHYL-4-PHENYLPYRROLIDINE INDUCED  
PRESSOR RESPONSES AND CATECHOLAMINE RELEASE IN 6-  
HYDROXYDOPAMINE TREATED RATS. 120234 02-03  
STUDIES ON THE PARADOXICAL INTERACTION OF PHYSOSTIGMINE AND  
PENTOBARBITAL ON REGIONAL BRAIN ACETYLCHOLINE CONTENT OF  
VARIOUS ANIMAL SPECIES. 121296 02-03  
CHOLINERGIC AND ADRENERGIC EFFECTS OF ATROPINE AND  
PHYSOSTIGMINE ON BRAIN CHEMISTRY AND LEARNED BEHAVIOR. 122228 02-04  
ALTERATIONS BY CENTRALLY ACTING DRUGS OF THE SUPPRESSION OF  
SELF-STIMULATION BEHAVIOR IN THE RAT BY TETRABENAZINE,  
PHYSOSTIGMINE, CHLORPROMAZINE AND PENTOBARBITAL. 133473 02-04
- PICOMOLE**  
NOREPINEPHRINE AND DOPAMINE: ASSAY BY MASS  
FRAGMENTOGRAPHY IN THE PICOMOLE RANGE. 120529 02-01
- PICROTOXIN**  
THE EFFECT OF THE GABA ANTAGONISTS BICUCULLINE AND PICROTOXIN  
ON PRIMARY AFFERENT TERMINAL EXCITABILITY. 121964 02-03  
EFFECTS OF PICROTOXIN AND STRYCHNINE UPON ELECTRICAL ACTIVITY  
OF THE PROXIMAL RETINA. 121968 02-03
- PIGMENTARY**  
PIGMENTARY RETINOPATHY ASSOCIATED WITH THIORIDAZINE  
ADMINISTRATION. 120823 02-15
- PILLS**  
EFFECTIVENESS OF WEIGHT REDUCTION INVOLVING DIET PILLS. 132958 02-11  
MORTALITY RATE IN PATIENTS RECEIVING DIET PILLS. 132959 02-15
- PILOCARPINE**  
EFFECTS OF AMPHETAMINE AND PILOCARPINE ON EATING BEHAVIOR IN  
RATS WITH CHRONICALLY LOW ACETYLCHOLINESTERASE LEVELS. 121177 02-04
- PILOT**  
A PILOT STUDY OF AMOXAPINE (CL-67772) IN DEPRESSED INPATIENTS. 132951 02-07
- PIMOZIDE**  
A PIMOZIDE SENSITIVE EFFECT OF APOMORPHINE ON BODY  
TEMPERATURE OF THE RABBIT. 119050 02-03  
PIMOZIDE IN ANXIETY NEUROSIS. 121310 02-10  
BLOCKADE BY PIMOZIDE OF (L) AMPHETAMINE INDUCED HYPERKINESIA  
IN MICE. 121316 02-04  
THE EFFECT OF L-DOPA AND (L) AMPHETAMINE ON THE LOCOMOTOR  
ACTIVITY AFTER PIMOZIDE AND PHENOXYBENZAMINE. 121317 02-04  
PIMOZIDE: A COMPARATIVE STUDY IN THE TREATMENT OF CHRONIC  
SCHIZOPHRENIC PATIENTS. 133220 02-07
- PINEAL**  
EFFECT OF DRUGS ON THE CALCIUM EXCHANGEABILITY IN THE PINEAL  
GLAND. 133751 02-03
- PIP**  
MEASUREMENT OF PHASIC INTEGRATED POTENTIALS (PIP) DURING  
TREATMENT WITH P-CHLOROPHENYLALANINE (PCPA). 119394 02-13
- PIPERACETAZINE**  
EVALUATION OF PIPERACETAZINE (GUIDE) INJECTION IN ACUTE  
SCHIZOPHRENICS. 132896 02-08
- PIPTHIAZINE**  
FLUSPIRILENE AND PIPOTHIAZINE UNDECYLENATE, TWO LONG-ACTING  
INJECTABLE NEUROLEPTICS; A DOUBLE-BLIND CONTROLLED TRIAL IN  
RESIDUAL SCHIZOPHRENIA. 121544 02-08
- PITUITARY**  
PITUITARY HORMONES AND AVOIDANCE BEHAVIOR OF THE RAT. 122450 02-04
- PLACEBO**  
COMPARISON OF CARISOPRODOL, BUTABARBITAL, AND PLACEBO IN  
TREATMENT OF THE LOW BACK SYNDROME. 132713 02-11
- PLACIDYL**  
EFFECTS OF PLACIDYL ON SLEEP OF NORMAL SUBJECTS. 124143 02-14
- PLASMA**  
EDEMA AND INCREASED PLASMA RENIN ACTIVITY IN LITHIUM TREATED  
PATIENTS. 120822 02-09  
TEMPORARY ALTERATION OF CEREBROVASCULAR PERMEABILITY TO  
PLASMA PROTEIN DURING DRUG-INDUCED SEIZURES. 122177 02-03  
PROPHYLACTIC TREATMENT OF MANIC-DEPRESSIVE PSYCHOSIS BY  
LITHIUM CARBONATE: THEORETICAL AND PRACTICAL CONCERN OF  
VARIATIONS IN PLASMA CONCENTRATION. 122316 02-13  
ACUTE EFFECTS OF DIPHENYLDANTOIN IN RELATION TO PLASMA  
LEVELS. 125029 02-13  
CHLORDIAZEPoxide PLASMA LEVELS AND CLINICAL RESPONSES. 127857 02-14  
EXTENT OF PLASMA PROTEIN BINDING OF AMPHETAMINE IN DIFFERENT  
SPECIES. 133780 02-13
- PLATELETS**  
UPTAKE AND LOSS OF 14C-DOPAMINE BY PLATELETS FROM CHILDREN  
WITH INFANTILE AUTISM. 119968 02-11
- POISONING**  
TWO CASES OF SEVERE LITHIUM CARBONATE POISONING. 122314 02-15  
CEREBRAL DISTURBANCES IN PREGNANCY DUE TO ACUTE POISONING  
WITH STEMETIL. 133068 02-15
- POLFA**  
CLINICAL STUDY OF THE ACTION OF THIORIDAZINE RETARD POLFA. 133462 02-07
- POLYAMINES**  
SOME PHARMACOLOGICAL PROPERTIES OF THE POLYAMINES SPERMINE  
AND SPERMININE - A REAPPRAISAL. 122077 02-03
- POLYCYCLIC**  
STUDIES ON THE INDUCTION OF SERUM HEMOPEXIN BY PENTOBARBITAL  
AND POLYCYCLIC HYDROCARBONS. 133733 02-03
- POLYDIPSIA**  
SEVERE POLYDIPSIA AND ANTIDIURESIS PRODUCED BY DIAZOXIDE. 130382 02-03
- PONTO-GENICULO-OCCIPITAL**  
BRAIN STEM SEROTONIN DEPLETION AND PONTO-GENICULO-OCCIPITAL  
WAVE ACTIVITY IN THE CAT TREATED WITH RESERPINE. 132684 02-03  
AN ANALYSIS OF THE EFFECT OF RESERPINE UPON PONTO-GENICULO-  
OCCIPITAL WAVE ACTIVITY IN THE CAT. 132685 02-03
- PONTOP**  
THE EFFECTS OF SOME PHENOTHIAZINE DERIVATIVES ON THE BEHAVIOR  
OF WILD HERRING GULLS. (LARUS A. ARGENTATUS PONTOP). 133381 02-04
- POOR**  
LITHIUM THERAPY FOR MANIC-DEPRESSIVES IN A LARGE, POOR,  
SPARSELY POPULATED CATCHMENT AREA. 119045 02-09
- POPULATED**  
LITHIUM THERAPY FOR MANIC-DEPRESSIVES IN A LARGE, POOR,  
SPARSELY POPULATED CATCHMENT AREA. 119045 02-09

- PORPHYRIA**  
LEARNED BEHAVIOR AND LIMBIC SYSTEM ACTIVITY IN EXPERIMENTAL PORPHYRIA. 122706 02-03
- POSEDRINE**  
RESULTS OF POSEDRINE THERAPY WITH NEUROSES AND PSYCHOPATHIES. 126996 02-10
- POSITION**  
DELTA9-TETRAHYDROCANNABINOL USED AS DISCRIMINATIVE STIMULUS FOR RATS IN POSITION LEARNING IN A T-SHAPED WATER MAZE. 133547 02-04
- POSTNATAL**  
BRAIN BIOCHEMICAL CHANGES IN RATS TREATED WITH CHLORPROMAZINE AND ELECTROSHOCKED DURING EARLY POSTNATAL DEVELOPMENT. 133708 02-03
- POSTURAL**  
A TYPICAL MANIFESTATIONS OF POSTURAL HYPOTENSION. 122728 02-15
- POTASSIUM**  
THE ELECTRIC INTERPHASIC BLOOD POTENTIAL FOR SODIUM AND POTASSIUM IONS IN PATIENTS TREATED WITH CHLORPROMAZINE FOR VARIOUS MENTAL DISORDERS. 133463 02-13
- POTENCY**  
RELATIVE POTENCY OF TRICHLOROFOS COMPARED TO PENTOBARBITAL AS A HYPNOTIC. 121985 02-07  
EFFECT OF MORPHINE DOSE SIZE ON THE CONDITIONED REINFORCING POTENCY OF STIMULI PAIRED WITH MORPHINE. 126906 02-04  
FURTHER PHARMACOLOGICAL STUDY ON ANTIAGGRESSIVE, SEDATIVE AND MUSCLE RELAXANT 8-CHLORO-6-PHENYL-4H-S-TRIAZOLOBENZODIAZEPINE (D-40TA) IN EXPERIMENTAL ANIMALS: COMPARATIVE STUDY ON POTENCY AND DURATION. 130909 02-04
- POTENT**  
N-METHYL BICUCULLINE, A CONVULSANT MORE POTENT THAN BICUCULLINE. 133716 02-02
- POTENTIAL**  
STUDY OF THE TERATOGENIC POTENTIAL OF DIAZEPAM AND SCH-12041. 121579 02-05  
SOMATOSENSORY EVOKED POTENTIAL: AN OBJECTIVE INDICATOR OF THE THERAPY EFFICACY OF A NEW PSYCHOTROPIC DRUG, CLORAZEPATE DIPOTASSIUM (TRANXENE). 132953 02-07  
EFFECT OF STIMULATORY DRUGS ON THE SOMATOSENSORY EVOKED POTENTIAL IN MAN. 133348 02-13  
THE ELECTRIC INTERPHASIC BLOOD POTENTIAL FOR SODIUM AND POTASSIUM IONS IN PATIENTS TREATED WITH CHLORPROMAZINE FOR VARIOUS MENTAL DISORDERS. 133463 02-13
- POTENTIALS**  
MEASUREMENT OF PHASIC INTEGRATED POTENTIALS (PIP) DURING TREATMENT WITH P-CHLOROPHENYLALANINE (PCPA). 119394 02-13  
THE EFFECTS OF PROCAINE, AMYLOBARBITONE ON DRUG-INDUCED CHANGES IN THE SURFACE POTENTIALS OF AN ISOLATED SYMPATHETIC GANGLION. 121302 02-03  
EFFECT OF MINOR AND MAJOR TRANQUILIZERS ON SOMATOSENSORY EVOKED POTENTIALS. 124152 02-13  
EFFECT OF DIISOPROPYL PHOSPHOROFUORIDATE (DFP) ON THE SOMATOSENSORY EVOKED POTENTIALS IN RATS. 133380 02-04
- POTENTIATION**  
HORMONAL POTENTIATION OF IMIPRAMINE AND ECT IN PRIMARY DEPRESSION. 120267 02-09  
THE COMPARATIVE ANTIDEPRESSANT VALUE OF L-TRYPTOPHAN AND IMIPRAMINE WITH AND WITHOUT ATTEMPTED POTENTIATION BY LIOTHYRONINE. 120995 02-09  
POTENTIATION OF AMITRIPTYLINE BY THYROID HORMONE. 120996 02-13  
SOME OBSERVATIONS ON THE BEHAVIOURAL EFFECTS OF HALLUCINOGENIC DRUGS ON RATS: POTENTIATION BY TWO DRUGS AFFECTING MONOAMINE METABOLISM. 133180 02-04
- POWER**  
EFFECTS OF ANTIHISTAMINIC AGENTS UPON THE ELECTROGRAPHIC ACTIVITY OF THE CAT BRAIN: A POWER SPECTRAL DENSITY STUDY. 132686 02-03
- PRANDIAL**  
PHARMACOLOGICAL INHIBITION OF EATING, DRINKING AND PRANDIAL DRINKING. 133679 02-04
- PRAZEPAM**  
PSYCHOPHARMACOLOGICAL PROFILE OF PRAZEPAM. 133296 02-02  
EFFECTS OF CHRONIC PRAZEPAM ADMINISTRATION ON DRUG METABOLISM IN MAN AND RAT. 133685 02-13
- PRECIPITATED**  
FAILURE OF AN OPIATE TO PROTECT MICE AGAINST NALOXONE PRECIPITATED WITHDRAWAL. 122184 02-04  
TONIC STATUS-EPILEPTICUS PRECIPITATED BY INTRAVENOUS DIAZEPAM IN A CHILD WITH PETIT-MAL STATUS. 123629 02-13  
TONIC STATUS-EPILEPTICUS PRECIPITATED BY INTRAVENOUS BENZODIAZEPINE IN FIVE PATIENTS WITH LENNOX-GASTAUT SYNDROME. 123636 02-13
- PRECURSOR**  
THE EFFECTS OF SOME TRYPTAMINE DERIVATIVES ON BRAIN MONOAMINES AND THEIR PRECURSOR AMINO ACIDS. 121279 02-03
- PREDICTING**  
DIGITAL COMPUTER ANALYZED SLEEP ELECTROENCEPHALOGRAPH (SLEEP PRINTS) IN PREDICTING ANXIOLYTIC PROPERTIES OF CLORAZEPATE DIPOTASSIUM (TRANXENE). 132950 02-14  
MULTIPLE REGRESSION TECHNIQUES IN PREDICTING PATIENT RESPONSE TO PSYCHOPHARMACOLOGIC DRUGS. 133644 02-16
- PREDICTION**  
PREDICTION OF RESPONSE TO PHENOTHIAZINES IN SCHIZOPHRENIA: A CROSS VALIDATION STUDY. 120698 02-08  
PREDICTION OF PSYCHIATRIC HOSPITALIZATION: II. THE HOSPITALIZATION PRONENESS SCALE: A CROSS VALIDATION. 134204 02-08
- PREDICTORS**  
PREDICTORS OF AMITRIPTYLINE RESPONSE IN OUTPATIENT DEPRESSIVES. 122426 02-14
- PREFERENCE**  
ETHANOL PREFERENCE IN THE RAT: INTERACTIONS BETWEEN BRAIN SEROTONIN AND ETHANOL, ACETALDEHYDE, PARALDEHYDE, 5-HTP AND 5-HTOL. 132682 02-04
- PREFERENTIALLY**  
BEHAVIORAL AND BIOCHEMICAL EFFECTS OF PREFERENTIALLY PROTECTING MONOAMINES IN THE BRAIN AGAINST THE ACTION OF RESERPINE. 120231 02-03
- PREGANGLIONIC**  
THE MICROELECTROPHORETIC ADMINISTRATION OF NORADRENALINE, 5-HYDROXYTRYPTAMINE, ACETYLCHOLINE AND GLYCINE TO SACRAL PARASYMPATHETIC PREGANGLIONIC NEURONS. 132153 02-03
- PREGNANCY**  
CEREBRAL DISTURBANCES IN PREGNANCY DUE TO ACUTE POISONING WITH STEMETIL. 133068 02-15
- PREGNANT**  
SUPPRESSION OF LYSERGIC ACID DIETHYLAMIDE (LSD) EFFECTS IN PREGNANT RATS. 124174 02-03  
WHOLE-BODY AUTORADIOGRAPHY OF THE PREGNANT MOUSE AFTER ADMINISTRATION OF C14-DELTA9-THC. 133727 02-03
- PREINJECTION**  
PREINJECTION TIME OF SCOPOLAMINE AND STEP-DOWN LATENCY IN MICE. 120097 02-04
- PREMEDICATION**  
DIAZEPAM AND MORPHINE AS PREMEDICATION FOR GASTROINTESTINAL ENDOSCOPY. 120835 02-13
- PREMENSTRUAL**  
TYPES OF ORAL CONTRACEPTIVES, DEPRESSION, AND PREMENSTRUAL SYMPTOMS. 125961 02-14
- PREMORBID**  
PREMORBID ADJUSTMENT, PHENOTHIAZINE TREATMENT, AND REMISSION IN ACUTE SCHIZOPHRENICS. 126228 02-08



## Subject Index

- PRENATAL**  
BEHAVIORAL EFFECTS OF PRENATAL ADMINISTRATION OF DIAZEPAM IN THE RAT. 131279 02-04  
PRENATAL CHLORPROMAZINE TREATMENT AND ADULT AVOIDANCE LEARNING. 131280 02-04
- PRESCRIBING**  
THE CURE-ALL FALLACY: DANGERS OF OVER PRESCRIBING. 132623 02-17
- PRESSOR**  
PHYSOSTIGMINE AND 1,1 DIMETHYL-4-PHENYLPYPERAZINIUM INDUCED PRESSOR RESPONSES AND CATECHOLAMINE RELEASE IN 6-HYDROXYDOPAMINE TREATED RATS. 120234 02-03
- PRESSURE**  
CENTRAL NERVOUS SYSTEM MECHANISMS RESPONSIBLE FOR BLOOD PRESSURE ELEVATION INDUCED BY P-CHLOROPHENYLALANINE. 119161 02-03
- PRESYNAPTIC**  
THE INFLUENCE OF SEMICARBAZIDE INDUCED DEPLETION OF GAMMA-AMINOBUTYRIC ACID ON PRESYNAPTIC INHIBITION. 121963 02-03
- PRETREATED**  
THE EFFECTS OF MEPERIDINE AND MORPHINE IN RABBITS PRETREATED WITH PHENELZINE. 121179 02-05  
PRELIMINARY NOTE: CHANGES IN RNA CONTENT OF SYMPATHETIC GANGLION CELLS OF RESERPINE PRETREATED RATS. 121283 02-03
- PRETREATMENT**  
EFFECT OF PRETREATMENT WITH SPIRONOLACTONE, PHENOBARBITAL OR BETA-DIETHYLAMINOETHYL DIPHENYLPROPYL-ACETATE (SKF-525-A) ON TRITIUM LEVELS IN BLOOD, HEART AND LIVER OF RATS AT VARIOUS TIMES AFTER ADMINISTRATION OF 3H-DIGITOXIN. 121243 02-03  
CHLORPROMAZINE INDUCED ALTERNATIONS OF CARBOHYDRATE METABOLISM: EFFECT OF CHLORPROMAZINE PRETREATMENT ON THE INSULIN RESPONSE TO GLUCOSE AND TOLBUTAMIDE IN THE ADRENALECTOMIZED RAT. (PH.D. DISSERTATION). 130182 02-03
- PREVALENCE**  
THE PREVALENCE OF TARDIVE DYSKINESIAS IN MENTAL HOSPITAL PATIENTS. 120729 02-15
- PREVENTION**  
PREVENTION OF TRAUMATIC SHOCK WITH LEVOMEPROMAZINE UNDER EXPERIMENTAL CONDITIONS. 125263 02-03  
PREVENTION AND MANAGEMENT OF TARDIVE DYSKINESIA. 127389 02-11  
LITHIUM IN TREATMENT AND PREVENTION OF AFFECTIVE DISORDERS. 133094 02-09  
PREVENTION OF ALCOHOLISM. 133864 02-11
- PREVENTIVE**  
LITHIUM SALTS IN PSYCHIATRIC THERAPY: CONCERNING THE CURATIVE AND PREVENTIVE TREATMENT. 122315 02-09
- PRIMARY**  
HORMONAL POTENTIATION OF IMIPRAMINE AND ECT IN PRIMARY DEPRESSION. 120267 02-09  
THE EFFECT OF MORPHINE ON PRIMARY SOMATOSENSORY EVOKED RESPONSES IN THE RAT CEREBRAL CORTEX. 121281 02-04  
THE EFFECT OF THE GABA ANTAGONISTS BICUCULLINE AND Picrotoxin ON PRIMARY AFFERENT TERMINAL EXCITABILITY. 121964 02-03
- PRINTS**  
DIGITAL COMPUTER ANALYZED SLEEP ELECTROENCEPHALOGRAPH (SLEEP PRINTS) IN PREDICTING ANXIOLYTIC PROPERTIES OF CLORAZEPATE DIPOTAASSIUM (TRANXENE). 132950 02-14
- PROACTIVE**  
TWENTY-FOUR HOUR PROACTIVE FACILITATION OF AVOIDANCE AND DISCRIMINATION BY PENTYLENETETRAZOL. 120016 02-04  
PROACTIVE EFFECT OF ACTINOMYCIN D ON MAZE PERFORMANCE IN THE RAT. 122058 02-04
- PROBENECID**  
STEADY-STATE LEVELS OF PROBENECID AND THEIR RELATION TO ACID MONOAMINE METABOLITES IN HUMAN CEREBROSPINAL FLUID. 119985 02-03  
THE EFFECTS OF ELECTROSHOCK THERAPY, LITHIUM AND TRICYCLIC ANTIDEPRESSANT TREATMENT ON PROBENECID INDUCED

## Psychopharmacology Abstracts

- ACCUMULATIONS OF CSF AMINE METABOLITES IN DEPRESSED PATIENTS. (UNPUBLISHED PAPER). 125200 02-09
- PROBLEM**  
AMOTIVATIONAL SYNDROME: THE REAL MANAGEMENT PROBLEM OF SCHIZOPHRENIA. 121902 02-08  
MEDICAL CARE OF PSYCHOTROPIC DRUG PROBLEM PATIENTS OUTSIDE HOSPITAL. 125278 02-17  
CASUISTIC CONTRIBUTION TO THE PROBLEM OF COMPULSIVE LAUGHTER. 126994 02-13  
ON THE PROBLEM OF DRUG PATHOGENESIS. 133083 02-10
- PROBLEMS**  
PROBLEMS IN IDENTIFICATION OF METHYLENEDIOXY AND METHOXY AMPHETAMINES. 125748 02-01  
VARIOUS PROBLEMS IN APPLICATION OF HYPNOSIS: HYPNOSIS BY NARCOTICS. 130575 02-17
- PROCAINE**  
THE EFFECTS OF PROCAINE, AMYLOBARBITONE ON DRUG-INDUCED CHANGES IN THE SURFACE POTENTIALS OF AN ISOLATED SYMPATHETIC GANGLION. 121302 02-03
- PROCARBAZINE**  
INHIBITION OF HEPATIC MICROSOMAL DRUG METABOLISM BY THE HYDRAZINES RO-4-4602, MK-486, AND PROCARBAZINE HYDROCHLORIDE. 132893 02-03
- PROCEDURES**  
HYSTERICAL BLEPHAROSPASM TREATED BY PSYCHOTHERAPY AND CONDITIONING PROCEDURES IN A GROUP SETTING. 131347 02-10
- PROCESSING**  
CLINICAL PSYCHOPHARMACOLOGICAL ASSESSMENT AND LONG-TERM OBSERVATION USING ELECTRONIC DATA PROCESSING. 133482 02-17
- PRODUCTION**  
MARIHUANA AND ALCOHOL: TIME PRODUCTION AND MEMORY FUNCTIONS. 129830 02-14
- PROFILE**  
PSYCHOPHARMACOLOGICAL PROFILE OF PRAZEPAM. 133296 02-02
- PROFILES**  
PSYCHIATRIC AND BIOCHEMICAL PROFILES OF LITHIUM THERAPY IN MANIA. (CASE REPORT). 130547 02-09
- PROGRAM**  
PROGRESS REPORT ON THE ASSESSMENT PROGRAM OF THE NIMH ADDICTION RESEARCH CENTER. (UNPUBLISHED PAPER). 123040 02-17
- PROGRAMS**  
MAINTENANCE PSYCHOTROPIC DRUGS IN THE PRESENCE OF ACTIVE TREATMENT PROGRAMS: A TRIPLE-BLIND WITHDRAWAL STUDY WITH LONG-TERM MENTAL PATIENTS. 122705 02-11
- PROGRESS**  
PROGRESS REPORT ON THE ASSESSMENT PROGRAM OF THE NIMH ADDICTION RESEARCH CENTER. (UNPUBLISHED PAPER). 123040 02-17
- PROGRESSIVE-RATIO**  
ENHANCEMENT OF PROGRESSIVE-RATIO PERFORMANCE BY CHLORDIAZEPoxide AND PHENOBARBITAL. 133725 02-04
- PROLONGED**  
EFFECTS OF PROLONGED PHENOTHIAZINE INTAKE ON PSYCHOTIC AND OTHER HOSPITALIZED CHILDREN. 119969 02-15  
PROLONGED METABOLISM OF PENTOBARBITAL IN ISOLATED PERFUSED LIVER OF TUMOR BEARING RATS. 122167 02-03  
DAZE REACTION: PROLONGED RESPONSE TO PSYCHEDELICS. (UNPUBLISHED PAPER). 125199 02-15  
AN ATTEMPT TO ADMINISTER NEUROLEPTICS WITH A PROLONGED EFFECT IN THE TREATMENT OF ACUTE PSYCHOTIC STATES. 132752 02-11
- PROMAZINE**  
COMPARATIVE STUDY ON THE INHIBITION OF NA<sup>+</sup>, K<sup>+</sup> ACTIVATED ATPASE ACTIVITY BY CHLORPROMAZINE, PROMAZINE, IMIPRAMINE, AND THEIR MONODESMETHYL METABOLITES. 122091 02-03

- EFFECTS OF CHLORPROMAZINE, TRIFLUOPERAZINE, PROMAZINE AND IMIPRAMINE ON THE PROPERTIES OF EXCITABLE MEMBRANES. 125258 02-03
- PROMETHAZINE**  
PENTOBARBITONE SLEEPING TIME AFTER HALOPERIDOL AND PROMETHAZINE. 133305 02-03
- PRONENESS**  
PREDICTION OF PSYCHIATRIC HOSPITALIZATION: II. THE HOSPITALIZATION PRONENESS SCALE: A CROSS VALIDATION. 134204 02-08
- PROPERICIAZINE**  
MORBID JEALOUSY: CLINICAL TESTING OF TREATMENT WITH PROPERICIAZINE. 133172 02-11
- PROPHYLACTIC**  
PROPHYLACTIC TREATMENT OF MANIC-DEPRESSIVE PSYCHOSIS BY LITHIUM CARBONATE: THEORETICAL AND PRACTICAL CONCERN OF VARIATIONS IN PLASMA CONCENTRATION. 122316 02-13
- PROPHYLAXIS**  
A CONTROLLED EVALUATION OF LITHIUM PROPHYLAXIS IN AFFECTIVE DISORDERS. 126205 02-09  
LITHIUM CARBONATE PROPHYLAXIS IN AFFECTIVE DISORDERS. (CLINICAL VERSUS RESEARCH APPLICATIONS). 127880 02-09
- PROPOSALS**  
LSD PSYCHOTHERAPY: A REVIEW OF THE LITERATURE AND SOME PROPOSALS FOR FUTURE RESEARCH. 133576 02-12
- PROPRANOLOL**  
EFFECTS OF PROPRANOLOL ON MARIJUANA INDUCED COGNITIVE DYSFUNCTIONING. 119034 02-14  
EFFECTS OF PROPRANOLOL, PHENTOLAMINE AND METHYL ATROPINE ON CARDIOVASCULAR FUNCTION IN THE SQUIRREL MONKEY DURING BEHAVIORAL EXPERIMENTS. 122179 02-03  
THE EFFECTS OF PROPRANOLOL AND ELECTRICAL STIMULATION ON THE CYCLIC 3,5 AMP CONTENT OF ISOLATED CEREBRAL TISSUE. 122357 02-03  
INTERACTIONS OF ANGIOTENSIN, PHENOXYBENZAMINE AND PROPRANOLOL ON NORADRENALINE RELEASE DURING SYMPATHETIC NERVE STIMULATION. 122568 02-03  
THE TREATMENT OF PHENOTHIAZINE INDUCED TACHYCARDIA BY PROPRANOLOL. 128463 02-13  
EFFECTS OF SYSTEMIC ADMINISTRATION OF PROPRANOLOL ON THE TIMING BEHAVIOR (DRL-20) OF RATS. 132761 02-04
- PROSPECTIVE**  
OVERDOSAGE OF TRICYCLIC ANTIDEPRESSANTS: A REPORT OF TWO DEATHS AND A PROSPECTIVE STUDY OF 24 PATIENTS. 121976 02-15
- PROTECT**  
FAILURE OF AN OPIATE TO PROTECT MICE AGAINST NALOXONE PRECIPITATED WITHDRAWAL. 122184 02-04
- PROTECTING**  
BEHAVIORAL AND BIOCHEMICAL EFFECTS OF PREFERENTIALLY PROTECTING MONOAMINES IN THE BRAIN AGAINST THE ACTION OF RESERPINE. 120231 02-03
- PROTECTION**  
ALTERED NOREPINEPHRINE METABOLISM FOLLOWING EXPERIMENTAL SPINAL CORD INJURY. PART 2: PROTECTION AGAINST TRAUMATIC SPINAL CORD HEMORRHAGIC NECROSIS BY NOREPINEPHRINE SYNTHESIS BLOCKADE WITH ALPHA-METHYL-TYROSINE. 121067 02-03  
PROTECTION BY DESIPRAMINE OF 6-HYDROXYDOPAMINE INDUCED DAMAGE TO ADRENERGIC NERVE TERMINALS IN MOUSE HEART. 122229 02-03
- PROTEIN**  
EFFECTS OF PHENOTHIAZINES ON AMINO ACID TRANSPORT AND PROTEIN SYNTHESIS IN ISOLATED NERVE ENDINGS. 119056 02-03  
BRAIN MICROSOMAL PROTEIN KINASE IN THE CHRONICALLY MORPHINIZED RAT. 121355 02-03  
TEMPORARY ALTERATION OF CEREBROVASCULAR PERMEABILITY TO PLASMA PROTEIN DURING DRUG-INDUCED SEIZURES. 122177 02-03  
INTERACTION OF HALLUCINOGENIC DRUGS WITH ENCEPHALITIC PROTEIN OF MYELIN. 128457 02-13
- TEMPERATURE INCREASES AND BLOOD PROTEIN CHANGES WITH NEUROLEPTICS: WITH SPECIAL CONSIDERATION OF THE NEW DIBENZODIAZEPINE DERIVATIVE, CLOZAPINE. 133350 02-15
- EXTENT OF PLASMA PROTEIN BINDING OF AMPHETAMINE IN DIFFERENT SPECIES. 133780 02-13
- PROTHIADEN**  
EXPERIENCE WITH PROTHIADEN IN NEUROLOGY. 122082 02-10
- PROXIMAL**  
EFFECTS OF PICROTOXIN AND STRYCHNINE UPON ELECTRICAL ACTIVITY OF THE PROXIMAL RETINA. 121968 02-03
- PS**  
HYPOTHETICAL ROLE OF DEAMINATED METABOLITES OF NORADRENALINE IN PGO SPIKING AND PS. 119392 02-03
- PS-2747**  
PS-2747: A NEW ANTIDEPRESSANT AGENT. 133128 02-03
- PSORIASIS**  
THE RELATIONSHIP OF LITHIUM CARBONATE TO PSORIASIS. 134327 02-05
- PSYCHEDELIC**  
WHICH DRUGS ARE PSYCHEDELIC AND WHICH PSYCHOTOXIC? 126902 02-12
- PSYCHEDELICS**  
DAZE REACTION: PROLONGED RESPONSE TO PSYCHEDELICS. (UNPUBLISHED PAPER). 125199 02-15
- PSYCHIATRIC**  
THE USE OF PYRACETAM IN SUBJECTIVE SYNDROMES CAUSED BY CRANIAL TRAUMA OBSERVED IN THE PSYCHIATRIC SERVICE OF A GENERAL HOSPITAL. 121855 02-11  
LITHIUM SALTS IN PSYCHIATRIC THERAPY: CONCERNING THE CURATIVE AND PREVENTIVE TREATMENT. 122315 02-09  
PSYCHIATRIC ADVERSE REACTIONS TO METHYLERGIDE. 122358 02-15  
PSYCHIATRIC EFFECTS OF HASHISH. 122708 02-12  
PSYCHIATRIC AND BIOCHEMICAL PROFILES OF LITHIUM THERAPY IN MANIA. (CASE REPORT). 130547 02-09  
DECISIONS ABOUT DRUG THERAPY. III. SELECTION OF TREATMENT FOR PSYCHIATRIC INPATIENTS. 131961 02-14  
USE OF PERPHENAZINE IN PSYCHIATRIC EMERGENCIES: THE CONCEPT OF CHEMICAL RESTRAINT. 132957 02-17  
EXCRETION OF VANILLYL-MANDELIC ACID, HOMOVANILLIC ACID, N-METHYL-NICOTINAMIDE, AND N-METHYL-2-PYRIDONE-5-CARBOXAMIDE IN URINE OF VOLUNTARY TEST PERSONS AND PSYCHIATRIC PATIENTS BEFORE AND AFTER ADMINISTRATION OF METHIONINE. 133265 02-13  
THE EFFECT OF NEUROLEPTIC DRUGS ON CEPHALIC CIRCULATION IN ELDERLY PSYCHIATRIC PATIENTS. 133353 02-11  
PREDICTION OF PSYCHIATRIC HOSPITALIZATION: II. THE HOSPITALIZATION PRONENESS SCALE: A CROSS VALIDATION. 134204 02-08
- PSYCHIATRISTS**  
THE IMPACT OF SCIENTIFIC MODELS ON CLINICAL PSYCHOPHARMACOLOGY: A PSYCHIATRISTS VIEW. 126937 02-17  
THE IMPACT OF SCIENTIFIC MODELS ON CLINICAL PSYCHOPHARMACOLOGY: A PSYCHIATRISTS VIEW. 126938 02-17
- PSYCHIATRY**  
PSYCHOPHARMACOLOGY AND PHARMACOTHERAPY IN PSYCHIATRY. 121940 02-17  
PHARMACOLOGY AND PSYCHIATRY. 125039 02-17  
BIOGENIC AMINES AND THEIR IMPACT IN PSYCHIATRY. 126935 02-03  
MIND AND BODY IN BIOLOGICAL PSYCHIATRY. 127517 02-14  
BIOLOGIC PSYCHIATRY IN PERSPECTIVE: THE DANGERS OF SECTARIANISM IN PSYCHIATRY. V. SOME INFERRED TRENDS. 129401 02-17  
SEDALUM IN PSYCHIATRY IN ITS CAPACITY AS TRANQUILIZER AND NEUROLEPTIC. 133173 02-07
- PSYCHIC**  
TREATMENT OF PSYCHIC DISTURBANCES IN AGING INDIVIDUALS. 133642 02-11

## Subject Index

- PSYCHOACTIVE**  
LONG-ACTING NEUROLEPTICS AND OTHER PSYCHOACTIVE DRUGS OF THE FUTURE. 119024 02-17
- PSYCHOACTIVE DRUGS AND BRAIN NEUROCHEMICAL TRANSMITTERS. 121299 02-13
- CONDITIONING OF FOOD AVERSIONS BY INJECTIONS OF PSYCHOACTIVE DRUGS. 123983 02-04
- PSYCHOACTIVE MEDICATION AND CONCERN: THE URBAN PHYSICIANS PRACTICAL RX FOR NEUROSES. 131345 02-10
- PSYCHOBIOLOGICAL**  
PSYCHOBIOLOGICAL AND PHARMACOLOGICAL STUDIES OF MANIC-DEPRESSIVE ILLNESS. 127217 02-09
- PSYCHOCINICAL**  
EXPERIMENTAL PSYCHOCINICAL TREATMENT OF THE SEVERELY MENTALLY RETARDED WITH ARGININE-N-ACETYL-ASPARTATE (AAA). 132772 02-11
- PSYCHODYNAMIC**  
DEPERSONALIZATION AND THE USE OF LSD: A PSYCHODYNAMIC STUDY. 121726 02-12
- PSYCHOGERIATRIC**  
A CONTROLLED STUDY OF THE EFFICACY OF PENTYLENETETRAZOL (METRAZOL) WITH HARD-CORE HOSPITALIZED PSYCHOGERIATRIC PATIENTS. 127184 02-11
- PSYCHOLOGIC**  
DELTA9-TETRAHYDROCANNABINOL: TEMPORAL CORRELATION OF THE PSYCHOLOGIC EFFECTS AND BLOOD LEVELS AFTER VARIOUS ROUTES OF ADMINISTRATION. 131610 02-14
- PSYCHOLOGICAL**  
SYMPOSIUM: BEHAVIOR MODIFICATION BY DRUGS. II. PSYCHOLOGICAL EFFECTS OF STIMULANT DRUGS IN CHILDREN WITH MINIMAL BRAIN DYSFUNCTION. 121989 02-14
- OBSERVATIONS ON THE RELATION OF MIGRAINE AND EPILEPSY: AN ELECTROENCEPHALOGRAPHIC, PSYCHOLOGICAL, AND CLINICAL STUDY USING ORAL TYRAMINE. 123637 02-13
- PSYCHOLOGISTS**  
GUIDELINES FOR PSYCHOLOGISTS FOR THE USE OF DRUGS IN RESEARCH. 119546 02-17
- PSYCHONEURAL**  
THE EFFECT OF TRANSAMINE ON THE MONOAMINE OXIDASE ACTIVITY AND PSYCHONEURAL BEHAVIOR IN RATS IN A LABYRINTH. 133674 02-04
- PSYCHOPATHIES**  
RESULTS OF POSEDRIE THERAPY WITH NEUROSES AND PSYCHOPATHIES. 126998 02-10
- PSYCHOPATHOLOGY**  
INTRODUCTION TO SCIENTIFIC MODELS AND PSYCHOPATHOLOGY. 126934 02-06
- PSYCHOPATHY**  
PSYCHOPATHY AND PHYSIOLOGICAL RESPONSES TO ADRENALIN. 122371 02-11
- PSYCHOPHARMACOLOGIC**  
MULTIPLE REGRESSION TECHNIQUES IN PREDICTING PATIENT RESPONSE TO PSYCHOPHARMACOLOGIC DRUGS. 133644 02-16
- PSYCHOPHARMACOLOGICAL**  
PSYCHOPHARMACOLOGICAL AGENTS AND CEREBRAL EDEMA. 130019 02-15
- PSYCHOPHARMACOLOGICAL PROFILE OF PRAZEPAM. 133296 02-02
- CLINICAL PSYCHOPHARMACOLOGICAL ASSESSMENT AND LONG-TERM OBSERVATION USING ELECTRONIC DATA PROCESSING. 133482 02-17
- PSYCHOPHARMACOLOGY**  
PSYCHOPHARMACOLOGY AND PHARMACOTHERAPY IN PSYCHIATRY. 121940 02-17
- THE IMPACT OF SCIENTIFIC MODELS ON CLINICAL PSYCHOPHARMACOLOGY: A PSYCHIATRISTS VIEW. 126937 02-17
- THE IMPACT OF SCIENTIFIC MODELS ON CLINICAL PSYCHOPHARMACOLOGY: A PSYCHIATRISTS VIEW. 126938 02-17
- THE IMPACT OF SCIENTIFIC MODELS ON CLINICAL PSYCHOPHARMACOLOGY: AN INTERNISTS VIEW. 126939 02-17
- THE IMPACT OF SCIENTIFIC MODELS ON CLINICAL PSYCHOPHARMACOLOGY: A PHARMACOLOGISTS VIEW. 126940 02-17
- PSYCHOPHYSIOLOGIC**  
PSYCHOPHYSIOLOGIC RESPONSES OF SCHIZOPHRENICS TO DRUGS. 120121 02-08

## Psychopharmacology Abstracts

- PSYCHOPHYSIOLOGICAL**  
EFFECTS OF TWO ANTIDEPRESSANTS UPON CONCEPT LEARNING: PSYCHOPHYSIOLOGICAL PARAMETERS IN DEPRESSED HUMANS. 134850 02-08
- PSYCHOSES**  
CONTRIBUTION TO LONG-TERM THERAPY FOR SCHIZOPHRENIC PSYCHOSES WITH RETARD NEUROLEPTICS. 121602 02-08
- THE NEUROLEPTIC ACTION OF OXAFLUMAZINE, PARTICULARLY IN ACUTE PSYCHOSES. 133626 02-11
- PSYCHOSIS**  
PSYCHOSIS DURING METHYLPHENIDATE ABUSE. 121581 02-15
- PROPHYLACTIC TREATMENT OF MANIC-DEPRESSIVE PSYCHOSIS BY LITHIUM CARBONATE: THEORETICAL AND PRACTICAL CONCERN OF VARIATIONS IN PLASMA CONCENTRATION. 122316 02-13
- CATECHOLAMINES IN THE BRAIN AS MEDIATORS OF AMPHETAMINE PSYCHOSIS. 122659 02-13
- PSYCHOSIS AND KETAMINE. 122883 02-14
- PSYCHOSIS AND KETAMINE. 122884 02-15
- CONTROLLED TRIAL OF PENFLURIDOL IN ACUTE PSYCHOSIS. 122885 02-08
- ACUTE PSYCHOSIS INDUCED BY PSYCHOTOMIMETIC DRUG ABUSE: CLINICAL FINDINGS. 126219 02-12
- ACUTE PSYCHOSIS INDUCED BY PSYCHOTOMIMETIC DRUG ABUSE: NEUROCHEMICAL FINDINGS. 126220 02-13
- OPIRAN, ANXIETY AND PSYCHOSIS: CLINICAL TESTING OF A NEW INCISIVE NEUROLEPTIC. 132766 02-07
- DEPOT PHENOTHIAZINE TREATMENT IN ACUTE PSYCHOSIS: A SEQUENTIAL COMPARATIVE STUDY. 134112 02-09
- AMPHETAMINE PSYCHOSIS: A MODEL SCHIZOPHRENIA MEDIATED BY CATECHOLAMINES. 134118 02-15
- PSYCHOSOMATIC**  
EDUCATION OF THE PSYCHOSOMATIC MEDICINE. 125863 02-17
- PSYCHOTHERAPEUTIC**  
ANTICONSULSANTS AND PSYCHOTHERAPEUTIC AGENTS OF KNOWN ABSOLUTE CONFIGURATION. (PH.D. DISSERTATION). 130163 02-01
- BLOCKING H3-NOREPINEPHRINE UPTAKE AND SOME GUANETHIDINE INDUCED EFFECTS WITH TRICYCLIC PSYCHOTHERAPEUTIC DRUGS. 133182 02-03
- PSYCHOTHERAPY**  
DRUGS VERSUS PSYCHOTHERAPY. 121261 02-17
- THE CONSEQUENCES OF PSYCHOTHERAPY FOR SCHIZOPHRENIC PATIENTS. 128408 02-08
- HYSTERICAL BLEPHAROSPASM TREATED BY PSYCHOTHERAPY AND CONDITIONING PROCEDURES IN A GROUP SETTING. 131347 02-10
- LSD PSYCHOTHERAPY: A REVIEW OF THE LITERATURE AND SOME PROPOSALS FOR FUTURE RESEARCH. 133576 02-12
- PSYCHOTIC**  
EFFECTS OF PROLONGED PHENOTHIAZINE INTAKE ON PSYCHOTIC AND OTHER HOSPITALIZED CHILDREN. 119969 02-15
- IDENTIFICATION AND TREATMENT OF ACUTE PSYCHOTIC STATES SECONDARY TO THE USAGE OF OVER-THE-COUNTER SLEEPING PREPARATIONS. 120269 02-15
- LITHIUM TREATMENT OF PSYCHOTIC CHILDREN AND ADOLESCENTS: A CONTROLLED CLINICAL TRIAL. 132189 02-09
- AN ATTEMPT TO ADMINISTER NEUROLEPTICS WITH A PROLONGED EFFECT IN THE TREATMENT OF ACUTE PSYCHOTIC STATES. 132752 02-11
- PSYCHOTICS**  
WHAT EVERY DOCTOR SHOULD KNOW ABOUT DRUG THERAPY FOR PSYCHOTICS. 120796 02-08
- PSYCHOTOMIMETIC**  
ACUTE PSYCHOSIS INDUCED BY PSYCHOTOMIMETIC DRUG ABUSE: CLINICAL FINDINGS. 126219 02-12
- ACUTE PSYCHOSIS INDUCED BY PSYCHOTOMIMETIC DRUG ABUSE: NEUROCHEMICAL FINDINGS. 126220 02-13

- PSYCHOTOXIC**  
WHICH DRUGS ARE PSYCHEDELIC AND WHICH PSYCHOTOXIC? 126902 02-12
- PSYCHOTROPIC**  
CLINICAL EVALUATION OF A NEW PSYCHOTROPIC DRUG; Y-4153 - COMPARATIVE STUDY WITH CHLORPROMAZINE USING A DOUBLE-BLIND METHOD. 120632 02-08  
INTERNATIONAL CONVENTION ON PSYCHOTROPIC DRUGS. 120735 02-17  
EFFECTS OF PSYCHOTROPIC DRUGS ON THE ERYTHROCYTE PERMEABILITY TO GLUCOSE AND ETHYLIDENE GLUCOSE. 121402 02-03  
PSYCHOTROPIC DRUGS AND THE ELDERLY PATIENT. 121780 02-15  
MAINTENANCE PSYCHOTROPIC DRUGS IN THE PRESENCE OF ACTIVE TREATMENT PROGRAMS: A TRIPLE-BLIND WITHDRAWAL STUDY WITH LONG-TERM MENTAL PATIENTS. 122705 02-11  
THE CLASSIFICATION OF PSYCHOTROPIC DRUGS. 125038 02-17  
MEDICAL CARE OF PSYCHOTROPIC DRUG PROBLEM PATIENTS OUTSIDE HOSPITAL. 125278 02-17  
PSYCHOTROPIC DRUGS. 128105 02-17  
EFFECTS OF PSYCHOTROPIC DRUGS ON EMOTIONAL BEHAVIOR IN RATS WITH LIMBIC LESIONS, WITH SPECIAL REFERENCE TO OLFACTORY BULB ABLATIONS. 128458 02-04  
ON THE ADMINISTRATION OF PSYCHOTROPIC DRUGS AND ITS SIDE-EFFECTS DETECTED BY LIVER FUNCTION TEST. 128952 02-08  
A DOUBLE-BLIND CONTROLLED TRIAL OF PSYCHOTROPIC DRUG OXAZOLAM ON NEUROTICS, WITH SPECIAL REFERENCE TO ITS HYPNOTIC EFFECT. 130068 02-10  
QUANTITATIVE PHARMACO-ELECTROENCEPHALOGRAPHY IN THE DISCOVERY OF A NEW GROUP OF PSYCHOTROPIC DRUGS. 130472 02-07  
THE USE OF ANTIHISTAMINES FOR THE ALLEVIATION OF URINARY RETENTION CAUSED BY PSYCHOTROPIC DRUGS. 131574 02-15  
PSYCHOTROPIC DRUGS. (UNPUBLISHED PAPER). 132363 02-03  
CLINICAL AND EEG EFFECTS OF GB-94, A TETRACYCLIC ANTIDEPRESSANT (EEG MODEL IN DISCOVERY OF A NEW PSYCHOTROPIC DRUG). 132894 02-07  
SOMATOSENSORY EVOKED POTENTIAL: AN OBJECTIVE INDICATOR OF THE THERAPY EFFICACY OF A NEW PSYCHOTROPIC DRUG, CLORAZEPATE DIPOTASSIUM (TRANXENE). 132953 02-07  
CENTRAL ATROPINE-LIKE TOXICITY IN COMBINED PSYCHOTROPIC DRUG ADMINISTRATION. 133123 02-15  
NEUROPSYCHOLOGICAL AND ELECTROMYOGRAPHIC STUDIES ON THE SHORT-TERM PSYCHOTROPIC EFFECT OF L-DOPA. 133347 02-14  
PSYCHOTROPIC DRUG INFLUENCES ON BRAIN ACETYLCHOLINE UTILIZATION. 133474 02-03  
SPECIES DIFFERENCES IN THE METABOLISM OF A TRICYCLIC PSYCHOTROPIC AGENT, SQ-11290-14C. 133718 02-13
- PULMONARY**  
HEROIN INDUCED PULMONARY EDEMA: SEQUENTIAL STUDIES OF PULMONARY FUNCTION. 118897 02-15  
PULMONARY COMPLICATIONS AFTER ESOPHAGOGASTROSCOPY USING DIAZEPAM. 120200 02-15  
METHADONE INDUCED PULMONARY EDEMA. 121218 02-15
- PUMP**  
DILANTIN, BRAIN ELECTROLYTES, THE SO-CALLED SODIUM PUMP AND SEIZURES. 132528 02-03
- PUNISHED**  
DRUGS AND PUNISHED RESPONDING I: RATE-DEPENDENT EFFECTS UNDER MULTIPLE SCHEDULES. 128323 02-04  
PUNISHED AND UNPUNISHED OPERANT BEHAVIOR AFTER ATROPINE ADMINISTRATION TO THE VMH OF SQUIRREL MONKEYS. 132117 02-04  
COMPARISON OF CHLORDIAZEPOXIDE, METHYSERGIDE, AND CINANSERIN AS MODIFIERS OF PUNISHED BEHAVIOR AND AS ANTAGONISTS OF N,N DIMETHYLTRYPTAMINE. 132776 02-04
- PUNISHMENT**  
EFFECTS OF INTERTRIAL CROSSING PUNISHMENT AND D-AMPHETAMINE SULFATE ON AVOIDANCE AND ACTIVITY IN FOUR SELECTIVELY BRED RAT STRAINS. 131293 02-04
- PUPILLARY**  
THE EFFECTS OF CONJUNCTIVAL INSTILLATION OF ESERINE AND HOMATROPINE ON PUPILLARY REACTIVITY IN SCHIZOPHRENICS. 127520 02-13
- PURKINJE**  
THE DENSITY AND ULTRASTRUCTURE OF THE PURKINJE CELLS FOLLOWING DIPHENYLHYDANTOIN TREATMENT IN ANIMALS AND MAN. 119002 02-03  
EFFECTS OF DIPHENYLHYDANTOIN AND OTHER ANTIEPILEPTIC DRUGS ON EPILEPTIFORM ACTIVITY AND PURKINJE CELL DISCHARGE RATES. 123632 02-03  
AUGMENTATION OF CEREBELLAR PURKINJE CELL DISCHARGE RATE AFTER DIPHENYLHYDANTOIN. 123633 02-03
- PUROMYCIN**  
EFFECTS OF PUROMYCIN ON LEARNING IN THE TOAD. 121507 02-04
- PUTATIVE**  
SYNERGY OF ETHANOL AND PUTATIVE NEUROTRANSMITTERS: GLYCINE AND SERINE. 134043 02-03
- PYRACETAM**  
THE USE OF PYRACETAM IN SUBJECTIVE SYNDROMES CAUSED BY CRANIAL TRAUMA OBSERVED IN THE PSYCHIATRIC SERVICE OF A GENERAL HOSPITAL. 121855 02-11
- PYRIDOXINE**  
COMMENTS ON THE ADVERSE EFFECT OF CONCURRENT PYRIDOXINE ADMINISTRATION ON THE EFFICACY OF L-DOPA IN TREATING PARKINSONISM. 133097 02-13
- PYRUVIC**  
SUBSTITUTED 3,4,5 TRIMETHOXYBENZAMIDES: CORRELATION BETWEEN INHIBITION OF PYRUVIC ACID OXIDATION AND ANTICONVULSANT ACTIVITY. 133745 02-03
- QUALITATIVE**  
A QUALITATIVE AND QUANTITATIVE EVALUATION OF AMANTADINE IN THE TREATMENT OF PARKINSONS DISEASE. 133071 02-11
- QUANTITATIVE**  
SOME QUANTITATIVE BEHAVIORAL CHANGES IN L-DOPA THERAPY. 121884 02-14  
QUANTITATIVE PHARMACO-ELECTROENCEPHALOGRAPHY IN THE DISCOVERY OF A NEW GROUP OF PSYCHOTROPIC DRUGS. 130472 02-07  
A QUALITATIVE AND QUANTITATIVE EVALUATION OF AMANTADINE IN THE TREATMENT OF PARKINSONS DISEASE. 133071 02-11  
OPIUM ALKALOIDS XII: QUANTITATIVE DETERMINATION OF MORPHINE IN OPIUM BY ISOTOPE DILUTION. 133744 02-06
- QUIDE**  
EVALUATION OF PIPERACETAZINE (QUIDE) INJECTION IN ACUTE SCHIZOPHRENICS. 132896 02-08
- RABBIT**  
A PIMOZIDE SENSITIVE EFFECT OF APOMORPHINE ON BODY TEMPERATURE OF THE RABBIT. 119050 02-03  
EFFECT OF MELIPRAMINE ON CARBOHYDRATE METABOLISM IN RABBIT BRAIN. 121877 02-03  
CHOLINERGIC EFFECTS ON ADRENERGIC NEUROTRANSMITTERS IN RABBIT BRAIN PARTS. 132690 02-03  
ELECTROENCEPHALOGRAM AND BEHAVIOR OF RABBITS IN PHYSIOLOGICAL AND DRUG-INDUCED SLEEP: PART II: EEG OF THE RABBIT IN DRUG INDUCED SLEEP. 132829 02-04  
THE INTERACTION BETWEEN DESMETHYLIMIPRAMINE AND GUANETHIDINE ON THE RABBIT ILEUM. THE IMPORTANCE OF THE NORADRENALINE UPTAKE PROCESS IN THE REVERSAL OF GUANETHIDINE INDUCED ADRENERGIC NEURONE BLOCKADE. 133214 02-03
- RABBITS**  
THE EFFECTS OF MEPERIDINE AND MORPHINE IN RABBITS PRETREATED WITH PHENELZINE. 121179 02-05  
EFFECTS OF HALOPERIDOL AND CHLORPROMAZINE ON CENTRAL ADRENERGIC AND CHOLINERGIC MECHANISMS IN RABBITS. 122026 02-04



# Subject Index

# Psychopharmacology Abstracts

- CENTRAL EFFECTS OF ATROPINE UPON AVERSIVE CLASSICAL  
CONDITIONING IN RABBITS. 123934 02-04
- ELECTROENCEPHALOGRAPH AND BEHAVIOR OF RABBITS IN  
PHYSIOLOGICAL AND DRUG-INDUCED SLEEP. PART II: EEG OF THE  
RABBIT IN DRUG INDUCED SLEEP. 132829 02-04
- ELECTROENCEPHALOGRAPH AND BEHAVIOR OF RABBITS IN  
PHYSIOLOGICAL AND DRUG INDUCED SLEEP. PART III: INFLUENCE OF  
HYPNOTICS ON SLEEP BEHAVIOR OF RABBITS; DISCUSSION AND  
SUMMARY. 133672 02-03
- RADIATION**
- CYCLIC-AMP IN BRAIN AREAS: EFFECTS OF AMPHETAMINE AND  
NOREPINEPHRINE ASSESSED THROUGH THE USE OF MICROWAVE  
RADIATION AS A MEANS OF TISSUE FIXATION. 133713 02-03
- RADICAL**
- EFFECTS OF CHLORPROMAZINE FREE RADICAL ON BRAIN AND  
MICROSOMAL ENZYMES. 118913 02-03
- RANGE**
- MAGNESIUM PEMOLINE: EFFECTS OF A BROAD RANGE OF DOSES ON  
WATER MAZE PERFORMANCE. 120018 02-04
- NOREPINEPHRINE AND DOPAMINE: ASSAY BY MASS  
FRAGMENTOGRAPHY IN THE PICOMOLE RANGE. 120529 02-01
- RAPHE**
- INSOMNIA AND CEREBRAL METABOLISM OF SEROTONIN IN CAT: IN  
VITRO SYNTHESIS AND RELEASE OF SEROTONIN 18 H AFTER  
DESTRUCTION OF THE RAPHE NUCLEI. 119684 02-03
- EFFECTS OF INTRAVENTRICULARLY INJECTED 6-HYDROXYDOPAMINE OR  
MIDBRAIN RAPHE LESION ON MORPHINE ANALGESIA IN RATS. 122396 02-03
- SYNAPTOSOMES FROM FOREBRAIN OF RATS WITH MIDBRAIN RAPHE  
LESION: SELECTIVE REDUCTION OF SEROTONIN UPTAKE. 124188 02-03
- RAT**
- EFFECTS OF MORPHINE AND CALCIUM ON RESPIRATION OF RAT BRAIN  
SLICES. 118999 02-03
- METABOLIC AND PHARMACOLOGIC INTERACTION OF ETHANOL AND  
METRONIDAZOLE IN THE RAT. 119000 02-03
- STUDIES ON THE MECHANISM OF AMPHETAMINE INDUCED LIPOLYSIS IN  
THE RAT. 119031 02-03
- MORPHINE CATALEPSY IN THE RAT: RELATION TO STRIATAL DOPAMINE  
METABOLISM. 119032 02-03
- EFFECT OF 6-HYDROXYDOPAMINE ON CATECHOLAMINE  
CONCENTRATIONS AND BEHAVIOR IN THE MORPHINE TOLERANT RAT. 119048 02-04
- SEROTONIN SYNTHESIS WITH RAT BRAIN SYNAPTOSOMES: EFFECTS OF  
SEROTONIN AND MONOAMINE OXIDASE INHIBITORS. 119055 02-03
- THE EFFECTS OF LOW-DOSE COMBINATIONS OF D-AMPHETAMINE AND  
COCAINE ON EXPERIMENTALLY INDUCED CONFLICT IN THE RAT. 119173 02-04
- EFFECT OF RESERPINE ON THE TRANSPORT OF 5-HYDROXYTRYPTAMINE  
TO THE RAT BRAIN. 119305 02-03
- DRUG-INDUCED ALTERATIONS IN THE ACTIVITY OF RAT BRAIN  
CHOLINERGIC ENZYMES: I. IN VITRO AND IN VIVO EFFECT OF  
AMPHETAMINE. 120230 02-03
- STERIC REQUIREMENTS FOR CATECHOLAMINE UPTAKE BY RAT BRAIN  
SYNAPTOSOMES: STUDIES WITH RIGID ANALOGS OF AMPHETAMINE. 120357 02-03
- THE EFFECTS OF CHRONIC IMIPRAMINE ADMINISTRATION ON RAT BRAIN  
LEVELS OF SEROTONIN, 5-HYDROXYINDOLEACETIC ACID,  
NOREPINEPHRINE AND DOPAMINE. 120359 02-03
- CENTRAL ACTIONS OF 6-HYDROXYDOPAMINE AND OTHER  
PHENYLETHYLAMINE DERIVATIVES ON BODY TEMPERATURE IN THE  
RAT. 120362 02-03
- REGIONAL RELEASE OF AROMATIC AMINES FROM TISSUES OF THE RAT  
BRAIN IN VITRO. 120524 02-03
- EFFECTS OF CHOLINERGIC AGONISTS AND ANTAGONISTS ON SELF-  
STIMULATION BEHAVIOR IN THE RAT. 120560 02-04
- DRUG EFFECTS ON UNCONDITIONED LIGHT AVOIDANCE IN THE RAT. 120787 02-04
- THE INFLUENCE OF ADRENALECTOMY, HYPOPHYSSECTOMY,  
THYROIDECTOMY, CASTRATION, AND TESTOSTERONE ON  
APOMORPHINE INDUCED AGGRESSIVE BEHAVIOUR IN THE RAT. 120790 02-04
- CHEMICALLY INDUCED DEGENERATION OF INDOLEAMINE-CONTAINING  
NERVE TERMINALS IN RAT BRAIN. 120813 02-03
- DRUG DISPOSITION AS A FACTOR IN THE LOWERING OF BRAIN  
SEROTONIN BY CHLOROAMPHETAMINES IN THE RAT. 121204 02-03
- EFFECTS OF ANESTHETICS ON SODIUM UPTAKE INTO RAT BRAIN CORTEX  
IN VITRO. 121210 02-03
- THE EFFECT OF MORPHINE ON PRIMARY SOMATOSENSORY EVOKED  
RESPONSES IN THE RAT CEREBRAL CORTEX. 121281 02-04
- TRANSFORMATION OF FISCHER RAT EMBRYO CELLS BY THE COMBINED  
ACTION OF MURINE LEUKEMIA VIRUS AND (-) TRANS-DELTA9-  
TETRAHYDROCANNABINOL. 121287 02-03
- REVERSAL LEARNING FACILITATED BY A SINGLE INJECTION OF LYSERGIC  
ACID DIETHYLAMIDE (LSD-25) IN THE RAT. 121303 02-04
- SOME EFFECTS OF THE HALLUCINOGENIC DRUG 2,5 DIMETHOXY-4-  
METHYLAMPHETAMINE ON THE METABOLISM OF BIOGENIC AMINES IN  
THE RAT BRAIN. 121305 02-03
- INHIBITION OF DOPADECARBOXYLASE IN THE RAT BY A SERIES OF  
BENZYLXYAMINES. 121314 02-03
- DECREASE OF RIBONUCLEASE ACTIVITY OF ISOLATED RAT LIVER  
CYTOPLASMIC RIBOSOMES AFTER THE PHENOBARBITAL  
ADMINISTRATION. 121326 02-03
- BRAIN MICROSOMAL PROTEIN KINASE IN THE CHRONICALLY  
MORPHINIZED RAT. 121355 02-03
- EFFECT OF GAMMA-HYDROXYBUTYRATE ON DOPAMINE AND DOPAMINE  
METABOLITES IN THE RAT STRIATUM. 121522 02-03
- MIXED FUNCTION OXIDASE AND ETHANOL METABOLISM IN PERFUSED  
RAT LIVER. 121546 02-03
- MORPHINE ENHANCES LATERAL HYPOTHALAMIC SELF-STIMULATION IN  
THE RAT. 121882 02-04
- PROACTIVE EFFECT OF ACTINOMYCIN D ON MAZE PERFORMANCE IN THE  
RAT. 122058 02-04
- ADRENALINE OR PERIPHERAL NORADRENALINE DEPLETION AND PASSIVE  
AVOIDANCE IN THE RAT. 122059 02-03
- DELTA9-TETRAHYDROCANNABINOL AND ETHYL-ALCOHOL: EVIDENCE FOR  
CROSS-TOLERANCE IN THE RAT. 122078 02-04
- SPECTRAL INTERACTIONS OF MARIJUANA CONSTITUENTS  
(CANNABINOIDS) WITH RAT LIVER MICROSOMAL MONOOXYGENASE  
SYSTEM. 122097 02-03
- ANALGESIC ACTIVITY OF DELTA9-TETRAHYDROCANNABINOL IN THE RAT  
AND MOUSE. 122200 02-04
- A 3-O-METHYLATED CATECHOL METABOLITE OF DIPHENYLHYDANTOIN  
(DILANTIN) IN RAT URINE. 122235 02-03
- EFFECT OF MATERNALLY INJECTED SODIUM PENTOBARBITAL DURING  
THE EMBRYONIC PERIOD OF GESTATION ON LIVER GLYCOGEN LEVELS  
IN THE RAT FETUS. 122236 02-03
- ENHANCED ACTIVITY OF BENZPYRENE HYDROXYLASE IN RAT LIVER AND  
LUNG AFTER ACUTE CANNABIS ADMINISTRATION. 122244 02-03
- EFFECT OF COLD EXPOSURE ON DRUG ACTION AND HEPATIC DRUG  
METABOLISM IN THE RAT. 122247 02-03
- PITUITARY HORMONES AND AVOIDANCE BEHAVIOR OF THE RAT. 122450 02-04
- LOCAL SYNTHESIS AND BREAKDOWN OF NORADRENALINE IN  
CONSTRICTED RAT SCIATIC NERVES. 122574 02-03
- THE DOSE-RESPONSE EFFECT OF AMPHETAMINE UPON AVOIDANCE  
BEHAVIOR IN THE RAT SEEN AS A FUNCTION OF INCREASING  
STEREOTYPY. 123935 02-04
- ALTERED METABOLISM OF SEROTONIN IN THE BRAIN OF THE RAT AFTER  
CHRONIC INGESTION OF D-AMPHETAMINE. 123938 02-03

- OXIDATION AND GLUCURONIDATION OF CERTAIN DRUGS IN VARIOUS SUBCELLULAR FRACTIONS OF RAT LIVER: BINDING OF DESMETHYLIMIPRAMINE AND HEXOBARBITAL TO CYTOCHROME-P-450 AND OXIDATION AND GLUCURONIDATION OF DESMETHYLIMIPRAMINE, AMINOPYRINE, P-NITROPHENOL AND 1-NAPHTHOL. 124120 02-03
- INHIBITION OF GABA TRANSAMINASE AND SLEEP IN THE RAT. 124160 02-03
- SOME ACTIONS OF PENTAZOCINE ON BEHAVIOR AND BRAIN MONOAMINES IN THE RAT. 124333 02-03
- METHAMPHETAMINE, FENFLURAMINE AND THEIR METABOLITES: IDENTIFICATION AND SUBCELLULAR LOCALIZATION IN RAT BRAIN HOMOGENATES. (UNPUBLISHED PAPER). 126248 02-01
- CHLORPROMAZINE INDUCED ALTERNATIONS OF CARBOHYDRATE METABOLISM: EFFECT OF CHLORPROMAZINE PRETREATMENT ON THE INSULIN RESPONSE TO GLUCOSE AND TOLBUTAMIDE IN THE ADRENALECTOMIZED RAT. (PH.D. DISSERTATION). 130182 02-03
- THE EFFECT OF LITHIUM CHLORIDE ON THE ELECTROLYTE COMPOSITION OF CEREBROSPINAL FLUID OF THE RAT. 130355 02-03
- BEHAVIORAL EFFECTS OF PRENATAL ADMINISTRATION OF DIAZEPAM IN THE RAT. 131279 02-04
- EFFECTS OF INTERTRIAL CROSSING PUNISHMENT AND D-AMPHETAMINE SULFATE ON AVOIDANCE AND ACTIVITY IN FOUR SELECTIVELY BRED RAT STRAINS. 131293 02-04
- DEPRESSION BY AMANTADINE OF DRUG-INDUCED RIGIDITY IN THE RAT. 132681 02-03
- ETHANOL PREFERENCE IN THE RAT: INTERACTIONS BETWEEN BRAIN SEROTONIN AND ETHANOL, ACETALDEHYDE, PARALDEHYDE, 5-HTP AND 5-HTOL. 132682 02-04
- TYROSINE HYDROXYLATION IN THE RAT STRIATUM IN VITRO AND IN VIVO AFTER NIGRAL LESION AND CHLORPROMAZINE TREATMENT. 132683 02-03
- INTERACTION BETWEEN CHOLINERGIC AND CATECHOLAMINERGIC NEURONES IN RAT BRAIN. 132703 02-03
- ULTRASTRUCTURAL CHANGES IN ISOLATED RAT BRAIN MITOCHONDRIA. 133048 02-03
- THE EFFECT OF EXPERIMENTAL LOCAL INFLAMMATION ON THE ACTION OF BARBITURATES IN RAT. 133126 02-03
- STUDIES ON THE ACCUMULATION OF O-METHYLATED DOPAMINE AND NORADRENALINE IN THE RAT BRAIN FOLLOWING VARIOUS NEUROLEPTICS, THYMOLEPTICS AND ACEPERONE. 133129 02-03
- RELATIVE DEGREE OF TOLERANCE TO MORPHINE SULFATE AND METHADONE HYDROCHLORIDE IN THE RAT AND THE INTERACTION OF DEXAMETHASONE. 133293 02-04
- ALTERATIONS BY CENTRALLY ACTING DRUGS OF THE SUPPRESSION OF SELF-STIMULATION BEHAVIOR IN THE RAT BY TETRABENAZINE, PHYSOSTIGMINE, CHLORPROMAZINE AND PENTOBARBITAL. 133473 02-04
- DEVELOPMENT OF BEHAVIOURAL TOLERANCE TO NICOTINE IN THE RAT. 133524 02-04
- EFFECT OF 5-HYDROXYDOPAMINE ON UPTAKE AND CONTENT OF SEROTONIN IN RAT STRIATUM. 133527 02-03
- EFFECTS OF CHRONIC PRAZEPAM ADMINISTRATION ON DRUG METABOLISM IN MAN AND RAT. 133685 02-13
- THE EFFECTS OF ENVIRONMENTAL ISOLATION ON BEHAVIOR AND REGIONAL RAT BRAIN TYROSINE HYDROXYLASE AND TRYPTOPHAN HYDROXYLASE ACTIVITIES. 133715 02-03
- CHANGES IN THE NEURONS OF CERTAIN SECTIONS OF THE RAT BRAIN DURING MOTOR STIMULATION INDUCED BY PHENAMINE. 133958 02-03
- RATE**
- EFFECT OF L-DOPA ON ELECTROMYOGRAPH AND HEART RATE OF PARKINSONIANS. 119246 02-13
- AUGMENTATION OF CEREBELLAR PURKINJE CELL DISCHARGE RATE AFTER DIPHENYLHYDANTOIN. 123633 02-03
- MORTALITY RATE IN PATIENTS RECEIVING DIET PILLS. 132959 02-15
- INFLUENCE OF ALCOHOL INTAKE, LENGTH OF ABSTINENCE AND MEPROBAMATE ON THE RATE OF ETHANOL METABOLISM IN MAN. 133599 02-11
- RATE-DEPENDENT**
- DRUGS AND PUNISHED RESPONDING I: RATE-DEPENDENT EFFECTS UNDER MULTIPLE SCHEDULES. 128323 02-04
- RATES**
- EFFECTS OF DIPHENYLHYDANTOIN AND OTHER ANTIEPILEPTIC DRUGS ON EPILEPTIFORM ACTIVITY AND PURKINJE CELL DISCHARGE RATES. 123632 02-03
- DRUG AND SOCIO THERAPY IN THE AFTERCARE OF SCHIZOPHRENIC PATIENTS: ONE-YEAR RELAPSE RATES. 131963 02-08
- PHARMACOLOGICAL IMPLICATIONS OF THE CHANGES OF BRAIN MONOAMINE TURNOVER RATES ELICITED BY (.) AMPHETAMINE AND SOME CHEMICALLY RELATED COMPOUNDS. (UNPUBLISHED PAPER). 132368 02-03
- RATS**
- EFFECT OF AMPHETAMINES ON TRYPTOPHAN CONCENTRATIONS IN MICE AND RATS. 119301 02-03
- EFFECTS OF DEXTROAMPHETAMINE FOLLOWING DESYNCHRONIZED SLEEP DEPRIVATION IN RATS. 119830 02-03
- THE BEHAVIOR OF WORKER AND NON-WORKER RATS UNDER THE INFLUENCE OF (-)DELTA9-TRANS-TETRAHYDROCANNABINOL, CHLORPROMAZINE AND AMYLOBARBITONE. 119981 02-04
- EFFECTS OF MONOAMINE OXIDASE INHIBITORS ON THE COPULATORY BEHAVIOR OF MALE RATS. 120009 02-04
- PHYSIOLOGICAL DISPOSITION OF ISOERGINE (FROM ARGYREIA-NERVOSA (BURM. F.) BOJER-CONVOLVULACEAE) AND ITS EFFECT ON THE CONDITIONED AVOIDANCE RESPONSE IN RATS. 120012 02-03
- THE EFFECT OF AMANTADINE ON MOTOR ACTIVITY AND CATALEPSY IN RATS. 120017 02-04
- INTRAHYPOTHALAMIC AND INTRASTRIATAL DOPAMINE AND NOREPINEPHRINE INJECTIONS IN RELATION TO MOTOR HYPERACTIVITY IN RATS. 120019 02-04
- EFFECTS OF ATROPINE ON PERFORMANCE OF AN S(D)-S(DELTA) DISCRIMINATION IN RATS. 120103 02-04
- METHYLPHENIDATE INDUCED INHIBITION OF EXPLORATORY BEHAVIOR IN RATS. 120219 02-04
- PHYSOSTIGMINE AND 1,1 DIMETHYL-4-PHENYLPYPERAZINIUM INDUCED PRESSOR RESPONSES AND CATECHOLAMINE RELEASE IN 6-HYDROXYDOPAMINE TREATED RATS. 120234 02-03
- ETHANOL CONSUMPTION BY RATS UNDER DIFFERENT LIGHTING CONDITIONS. 120399 02-05
- SELECTIVE INCREASE IN AVOIDANCE RESPONDING BY METHAMPHETAMINE IN NAIVE RATS. 120786 02-04
- CHLORDIAZEPOXIDE MODIFIED EXPLORATION IN RATS. 120788 02-04
- EFFECTS OF CHLORDIAZEPOXIDE UPON SPONTANEOUS ALTERNATION AND THE HIPPOCAMPAL ELECTRICAL ACTIVITY IN WHITE RATS. 120792 02-04
- EFFECTS OF L-DOPA ON THE EEG AND BRAIN AMINES OF UNRESTRAINED RATS. 121063 02-03
- EFFECTS OF AMPHETAMINE AND PILOCARPINE ON EATING BEHAVIOR IN RATS WITH CHRONICALLY LOW ACETYLCHOLINESTERASE LEVELS. 121177 02-04
- INHIBITION BY ETHYLMORPHINE AND PENTOBARBITONE IN VITRO OF THE METABOLISM OF (UREYL-14C)TOLBUTAMIDE BY HEPATIC MICROSOMAL PREPARATIONS FROM MALE AND FEMALE RATS TREATED WITH PHENOBARBITONE. 121181 02-03
- ACCUMULATION AND ELIMINATION OF A NOVEL METABOLITE DURING CHRONIC ADMINISTRATION OF THE PHENOTHIAZINE DRUG PERAZINE TO RATS. 121198 02-03
- EFFECT OF PRETREATMENT WITH SPIRONOLACTONE, PHENOBARBITAL OR BETA-DIETHYLAMINOETHYL DIPHENYLPROPYL-ACETATE (SKF-525-A) ON TRITIUM LEVELS IN BLOOD, HEART AND LIVER OF RATS AT VARIOUS TIMES AFTER ADMINISTRATION OF 3H-DIGITOXIN. 121243 02-03
- THE SPONTANEOUS MOTILITY OF RATS AFTER INTRAVENTRICULAR INJECTION OF DOPAMINE. 121275 02-04
- PRELIMINARY NOTE: CHANGES IN RNA CONTENT OF SYMPATHETIC GANGLION CELLS OF RESERPINE PRETREATED RATS. 121283 02-03

## Subject Index

- EFFECT OF MELIPRAMINE ON CARBOHYDRATE AND MONOAMINE METABOLISM IN BRAIN OF RESERPINIZED RATS. 121878 02-03
- EFFECTS OF BARBITAL ON DEPRIVATION INDUCED WATER CONSUMPTION BY RATS. 122033 02-04
- THE EFFECTS OF P-CHLOROPHENYLALANINE ON THE MATING BEHAVIOR OF MALE RATS. 122036 02-04
- PROLONGED METABOLISM OF PENTOBARBITAL IN ISOLATED PERFUSED LIVER OF TUMOR BEARING RATS. 122167 02-03
- METABOLISM OF DICOUMAROL BY LIVER MICROSOMES FROM UNTREATED AND PHENOBARBITAL TREATED RATS. 122169 02-03
- LOCOMOTOR ACTIVITY INCREASES PRODUCED BY INTRAHIPPOCAMPAL AND INTRASEPTAL ATROPINE IN RATS. 122391 02-04
- CLONIDINE INDUCED INTRAHYPOTHALAMIC STIMULATION OF EATING IN RATS. 122395 02-04
- EFFECTS OF INTRAVENTRICULAR INJECTED 6-HYDROXYDOPAMINE OR MIDBRAIN RAPHE LESION ON MORPHINE ANALGESIA IN RATS. 122396 02-03
- ALTERED RESPONSE TO APOMORPHINE IN 6-HYDROXYDOPAMINE TREATED RATS. 122444 02-03
- EFFECTS OF ATROPINE SULPHATE ON REPEATED EXTINCTION PERFORMANCE IN HIPPOCAMPECTOMIZED RATS. 123936 02-04
- BETA-ADRENERGIC BLOCKING AGENTS AND AMPHETAMINE OR APOMORPHINE INDUCED STEREOTYPED BEHAVIOR IN RATS. 123937 02-04
- EFFECTS OF CHLORDIAZEPOXIDE ON PASSIVE AVOIDANCE RESPONSES IN RATS. 123939 02-04
- SUPPRESSION OF LYSERGIC ACID DIETHYLAMIDE (LSD) EFFECTS IN PREGNANT RATS. 124174 02-03
- SYNAPTOSOMES FROM FOREBRAIN OF RATS WITH MIDBRAIN RAPHE LESIONS: SELECTIVE REDUCTION OF SEROTONIN UPTAKE. 124188 02-03
- ACETYLCHOLINE LEVEL IN BRAIN STRUCTURES OF RATS FOLLOWING ADMINISTRATION OF LYSERGIC ACID DIETHYLAMIDE. 125256 02-03
- EFFECT OF THE IMIPRAMINE GROUP OF ANTIDEPRESSANTS ON THE SEROTONIN LEVEL AND ACTIVITY OF 5-OXYTRYPTOPHANE CARBOXYLASE IN THE BRAIN OF ALBINO RATS. 125260 02-03
- EFFECTS OF TRIHEXYPHENIDYL ON SCHEDULE INDUCED ALCOHOL DRINKING BY RATS. 125531 02-03
- CHANGES IN OPERANT BEHAVIOR AS AN INDEX OF A WITHDRAWAL STATE FROM MORPHINE IN RATS. 127528 02-04
- EFFECTS OF PSYCHOTROPIC DRUGS ON EMOTIONAL BEHAVIOR IN RATS WITH LIMBIC LESIONS, WITH SPECIAL REFERENCE TO OLFACTORY BULB ABLATIONS. 128458 02-04
- SYRUP METHADONE CONSUMPTION BY RATS. 129619 02-04
- SEROTONERGIC AND CHOLINERGIC INVOLVEMENT IN HABITUATION OF ACTIVITY AND SPONTANEOUS ALTERNATION OF RATS IN A Y-MAZE. 131131 02-03
- EFFECTS OF SCOPOLAMINE ON SPATIAL DOUBLE ALTERNATION IN RATS. 131132 02-04
- LEARNED BEHAVIORAL TOLERANCE TO MARIHUANA IN RATS. 131281 02-04
- FRACTIONATION BY ZONAL CENTRIFUGATION OF BRAIN OF NORMAL RATS AND RATS TREATED WITH MORPHINE. 132642 02-03
- LACK OF TOXIC EFFECT OF GUANETHIDINE ON NERVE CELLS AND SMALL INTENSELY FLUORESCENT CELLS IN CULTURES OF SYMPATHETIC GANGLIA OF NEWBORN RATS. 132656 02-03
- SCHEDULE CONTROLLED AND DRUG-INDUCED RELEASE OF NOREPINEPHRINE-7-3H INTO THE LATERAL VENTRICLE OF RATS. 132689 02-03
- EFFECTS OF SYSTEMIC ADMINISTRATION OF PROPRANOLOL ON THE TIMING BEHAVIOR (DRL-20) OF RATS. 132761 02-04
- AGE AND LACK OF HANDLING AS FACTORS IN THE CONSUMPTION OF AN ETONITAZENE SOLUTION BY NAIVE RATS. 133133 02-04
- BIPHASIC EFFECTS OF DELTA9-TETRAHYDROCANNABINOL ON VARIABLE INTERVAL SCHEDULE PERFORMANCE IN RATS. (UNPUBLISHED PAPER) 133171 02-04

## Psychopharmacology Abstracts

- SOME OBSERVATIONS ON THE BEHAVIOURAL EFFECTS OF HALLUCINOGENIC DRUGS ON RATS: POTENTIATION BY TWO DRUGS AFFECTING MONOAMINE METABOLISM. 133180 02-04
- THE EFFECT OF L-DOPA ON CORTICAL AND SUBCORTICAL ELECTRICAL ACTIVITY IN NORMAL UNRESTRAINED RATS. 133294 02-03
- PERAZINE AND IMIPRAMINE CONTENT IN THE TISSUES OF RATS OF DIFFERENT AGES. 133352 02-03
- EFFECT OF DIISOPROPYL PHOSPHOROFUORIDATE (DFP) ON THE SOMATOSENSORY EVOKED POTENTIALS IN RATS. 133380 02-04
- DISSOCIATION OF VERTICAL AND HORIZONTAL COMPONENTS OF ACTIVITY IN RATS TREATED WITH LITHIUM CHLORIDE. 133521 02-04
- AGGRESSIVE BEHAVIOUR INDUCED BY MARIHUANA COMPOUNDS AND AMPHETAMINE IN RATS PREVIOUSLY MADE DEPENDENT ON MORPHINE. 133522 02-04
- DELTA9-TETRAHYDROCANNABINOL USED AS DISCRIMINATIVE STIMULUS FOR RATS IN POSITION LEARNING IN A T-SHAPED WATER MAZE. 133547 02-04
- THE EFFECT OF TRANSAMINE ON THE MONOAMINE OXIDASE ACTIVITY AND PSYCHONEURAL BEHAVIOR IN RATS IN A LABYRINTH. 133674 02-04
- BRAIN BIOCHEMICAL CHANGES IN RATS TREATED WITH CHLORPROMAZINE AND ELECTROSHOCKED DURING EARLY POSTNATAL DEVELOPMENT. 133708 02-03
- DIFFERENTIAL ANTAGONISM, BY MER-25, OF BEHAVIORAL AND MORPHOLOGICAL EFFECTS OF ESTRADIOL BENZOATE IN RATS. 133714 02-04
- DEFICITS IN FEEDING BEHAVIOR AFTER INTRAVENTRICULAR INJECTION OF 6-HYDROXYDOPAMINE IN RATS. 133750 02-03
- MARIHUANA AND SHOCK INDUCED AGGRESSION IN RATS. 133770 02-04
- EFFECT OF MELIPRAMINE ON THE SEROTONIN CONTENT IN THE BRAIN OF RESERPINIZED RATS. 133961 02-03
- CHRONIC EFFECTS OF SINGLE NITROGEN MUSTARD INJECTION ON THE ACTIVITY RESPONSE OF ALBINO RATS. 134101 02-04
- REACTION**  
A DRUG-INDUCED CEREBRAL REACTION: A CASE OF MYOCLONIC STATUS UNDER TREATMENT WITH TRICYCLIC ANTIDEPRESSIVES. 122340 02-15
- DAZE REACTION: PROLONGED RESPONSE TO PSYCHEDELICS. (UNPUBLISHED PAPER). 125199 02-15
- ALLERGIC REACTION TO METHYLPHENIDATE. 133804 02-15
- REACTIONS**  
PSYCHIATRIC ADVERSE REACTIONS TO METHYLERGIDE. 122358 02-15
- REACTIVITY**  
THE EFFECTS OF CONJUNCTIVAL INSTILLATION OF ESERINE AND HOMATROPINE ON PUPILLARY REACTIVITY IN SCHIZOPHRENICS. 127520 02-13
- REAPPRAISAL**  
SOME PHARMACOLOGICAL PROPERTIES OF THE POLYAMINES SPERMINE AND SPERMIDINE - A REAPPRAISAL. 122077 02-03
- RECALL**  
THE EFFECTS OF SCOPOLAMINE ON THE DELAYED RECALL OF NUMBERS TESTS. 126745 02-14
- RECEIVING**  
MORTALITY RATE IN PATIENTS RECEIVING DIET PILLS. 132959 02-15
- BEHAVIOR OF BIOPHYSICAL BLOOD PROPERTIES IN CHILDREN WITH MENTAL DISORDERS RECEIVING CHLORPROMAZINE TREATMENT. 133076 02-03
- RECEPTOR**  
THE EFFECT OF CALCIUM AND MAGNESIUM IONS ON DRUG RECEPTOR INTERACTIONS. 122239 02-03
- THYROID IMIPRAMINE CLINICAL AND CHEMICAL INTERACTION: EVIDENCE FOR A RECEPTOR DEFICIT IN DEPRESSION. 127216 02-09
- RECEPTORS**  
EVIDENCE THAT METHADONE BLOCKS DOPAMINE RECEPTORS IN THE BRAIN. 122284 02-03
- CLINICAL PHARMACOLOGY OF 5-HYDROXYTRYPTAMINE AND CATECHOLAMINES VENOMOTOR RECEPTORS. 133749 02-13

**RECOGNITION**

- THE BLACK CLOUD: THE RECOGNITION AND TREATMENT OF ENDOGENOUS DEPRESSION IN GENERAL PRACTICE. 122095 02-17

**RED-WINGED**

- THE EFFECT OF TRANQUILIZATION UPON TERRITORY MAINTENANCE IN THE MALE RED-WINGED BLACKBIRD (*AGELAIUS-PHOENICEUS*). 129868 02-04

**REDUCED**

- FURTHER CHARACTERIZATION OF A REDUCED NICOTINAMIDE ADENINE DINUCLEOTIDE PHOSPHATE DEPENDENT ALDEHYDE REDUCTASE FROM BOVINE BRAIN: INHIBITION BY PHENOTHIAZINE DERIVATIVES. 121634 02-03

**REDUCING**

- BENZODIAZEPINES: ANXIETY REDUCING ACTIVITY BY REDUCTION OF SEROTONIN TURNOVER IN THE BRAIN. 121174 02-03

**REDUCTASE**

- FURTHER CHARACTERIZATION OF A REDUCED NICOTINAMIDE ADENINE DINUCLEOTIDE PHOSPHATE DEPENDENT ALDEHYDE REDUCTASE FROM BOVINE BRAIN: INHIBITION BY PHENOTHIAZINE DERIVATIVES. 121634 02-03

- INTRACELLULAR LOCALIZATION AND CO-FACTOR REQUIREMENT OF AMPHETAMINE TETRAZOLIUM REDUCTASE OF GUINEA-PIG BRAIN. 133763 02-03

**REDUCTION**

- BENZODIAZEPINES: ANXIETY REDUCING ACTIVITY BY REDUCTION OF SEROTONIN TURNOVER IN THE BRAIN. 121174 02-03

- INDUCTION OR REDUCTION OF CATECHOLAMINE ENZYMES: REGULATION OF CATECHOLAMINE TURNOVER BY VARIATIONS OF ENZYME LEVELS. 122222 02-03

- SYNAPTOSOMES FROM FOREBRAIN OF RATS WITH MIDBRAIN RAPHE LESIONS: SELECTIVE REDUCTION OF SEROTONIN UPTAKE. 124188 02-03

- REDUCTION OF ANXIETY IN GENETICALLY TIMID DOGS: DRUG-INDUCED SCHIZOKINESIS AND AUTOKINESIS. 132527 02-04

- EFFECTIVENESS OF WEIGHT REDUCTION INVOLVING DIET PILLS. 132958 02-11

**REFLEX**

- CONDITIONED REFLEX ANALYSIS OF CHRONIC SCHIZOPHRENIAS. 131571 02-08

**REFLEXES**

- EFFECTS OF GAMMA-HYDROXYBUTYRATE ON CHICK BEHAVIOUR, ELECTROCORTICAL ACTIVITY AND CROSSED EXTENSOR REFLEXES. 120124 02-05

**REGRESSION**

- MULTIPLE REGRESSION TECHNIQUES IN PREDICTING PATIENT RESPONSE TO PSYCHOPHARMACOLOGIC DRUGS. 133644 02-16

**REGULATION**

- EFFECT OF INTRACEREBRAL INJECTIONS OF CARBAMYLCHOLINE AND ACETYLCHOLINE ON TEMPERATURE REGULATION IN THE CAT. 120811 02-03

- DYNAMICS OF THE REGULATION OF HISTAMINE LEVELS IN MOUSE BRAIN. 121072 02-03

- DOPAMINE-BETA-HYDROXYLASE: REGULATION OF ITS SYNTHESIS AND RELEASE FROM NERVE TERMINALS. 122221 02-03

- INDUCTION OR REDUCTION OF CATECHOLAMINE ENZYMES: REGULATION OF CATECHOLAMINE TURNOVER BY VARIATIONS OF ENZYME LEVELS. 122222 02-03

**REINFORCING**

- EFFECT OF MORPHINE DOSE SIZE ON THE CONDITIONED REINFORCING POTENCY OF STIMULI PAIRED WITH MORPHINE. 126906 02-04

**RELAPSE**

- DRUG AND SOCIO THERAPY IN THE AFTERCARE OF SCHIZOPHRENIC PATIENTS: ONE-YEAR RELAPSE RATES. 131963 02-08

**RELAPSED**

- A CLINICAL STUDY OF MESORIDAZINE AND CHLORPROMAZINE IN RELAPSED SCHIZOPHRENIC PATIENTS. 130474 02-08

**RELAXANT**

- FURTHER PHARMACOLOGICAL STUDY ON ANTIAGGRESSIVE, SEDATIVE AND MUSCLE RELAXANT 8-CHLORO-6-PHENYL-4H-S-TRIAZOLOBENZODIAZEPINE (D-40TA) IN EXPERIMENTAL ANIMALS: COMPARATIVE STUDY ON POTENCY AND DURATION. 130909 02-04

**RELAXATION**

- INTRAVENOUS DIAZEPAM FOR FACILITATING RELAXATION FOR DESENSITIZATION. 121397 02-10

**RELEASE**

- INSOMNIA AND CEREBRAL METABOLISM OF SEROTONIN IN CAT: IN VITRO SYNTHESIS AND RELEASE OF SEROTONIN 18 H AFTER DESTRUCTION OF THE RAPHE NUCLEI. 119684 02-03

- PHYSOSTIGMINE AND 1,1 DIMETHYL-4-PHENYLPYPERAZINIUM INDUCED PRESSOR RESPONSES AND CATECHOLAMINE RELEASE IN 6-HYDROXYDOPAMINE TREATED RATS. 120234 02-03

- REGIONAL RELEASE OF AROMATIC AMINES FROM TISSUES OF THE RAT BRAIN IN VITRO. 120524 02-03

- DOPAMINE-BETA-HYDROXYLASE: REGULATION OF ITS SYNTHESIS AND RELEASE FROM NERVE TERMINALS. 122221 02-03

- INTERACTIONS OF ANGIOTENSIN, PHENOXYBENZAMINE AND PROPRANOLOL ON NORADRENALINE RELEASE DURING SYMPATHETIC NERVE STIMULATION. 122568 02-03

- RELEASE OF BRAIN DOPAMINE AS THE PROBABLE MECHANISM FOR THE HYPOTHERMIC EFFECT OF D-AMPHETAMINE. 128353 02-03

- ENHANCED RELEASE OF DOPAMINE-BETA-HYDROXYLASE AND NOREPINEPHRINE FROM SYMPATHETIC NERVES BY DIBUTYRYL CYCLIC-AMP AND THEOPHYLLINE. (UNPUBLISHED PAPER). 132369 02-03

- SCHEDULE CONTROLLED AND DRUG-INDUCED RELEASE OF NOREPINEPHRINE-7-3H INTO THE LATERAL VENTRICLE OF RATS. 132689 02-03

**RELIEF**

- PARKINSONS TREMOR, RELIEF BY AN ANTIAMINIC DRUG (BC-105): DISCUSSION ON THE BIOCHEMICAL PATHOGENESIS OF PARKINSONIAN TREMOR. 133517 02-11

**RELIEVING**

- A DOUBLE-BLIND COMPARISON OF THE EFFICACY OF EX-10-029 AND TRIHEXYPHENIDYL HYDROCHLORIDE IN RELIEVING DRUG-INDUCED PARKINSONIAN SYMPTOMS. 132956 02-07

**REM**

- THE SWITCH PROCESS IN MANIC-DEPRESSIVE ILLNESS. II. RELATIONSHIP TO CATECHOLAMINES, REM SLEEP, AND DRUGS. 122980 02-09

**REMEMBERED**

- AKATHISIA: A SIDE-EFFECT TO BE REMEMBERED. 126502 02-15

**REMISSION**

- PREMORBID ADJUSTMENT, PHENOTHIAZINE TREATMENT, AND REMISSION IN ACUTE SCHIZOPHRENICS. 126228 02-08

**REMOVAL**

- NEUROPSYCHOLOGICAL TEST PERFORMANCE BEFORE AND AFTER SYMPTOM REMOVAL IN A CHILD WITH GILLES-DE-LA-TOURETTE SYNDROME. 125802 02-14

**RENAL**

- EFFECT OF NEUROTROPIC AGENTS ON CHANGES IN BIOELECTRIC ACTIVITY OF THE RENAL NERVE, EVOKED BY STIMULATION OF THE DESCENDING COLUMNS OF THE SPINAL CORD. 125262 02-03

**RENIN**

- EDEMA AND INCREASED PLASMA RENIN ACTIVITY IN LITHIUM TREATED PATIENTS. 120822 02-09

**REPEAL**

- A VOTE AGAINST ANTISUBSTITUTION REPEAL. 122079 02-17

**REPEATED**

- SINGLE VERSUS REPEATED DOSAGE OF THE MINOR TRANQUILIZER CHLORDIAZEPOXIDE (LIBRIUM). 120655 02-17

- EFFECTS OF ATROPINE SULPHATE ON REPEATED EXTINCTION PERFORMANCE IN HIPPOCAMPECTOMIZED RATS. 123936 02-04

**REPLENISHMENT**

- THE EFFECT OF NOREPINEPHRINE REPLENISHMENT ON ALPHA-METHYL-P-TYROSINE TREATED MONKEYS. 130110 02-04

**REQUIREMENT**

- INTRACELLULAR LOCALIZATION AND CO-FACTOR REQUIREMENT OF AMPHETAMINE TETRAZOLIUM REDUCTASE OF GUINEA-PIG BRAIN. 133763 02-03

**REQUIREMENTS**

- STERIC REQUIREMENTS FOR CATECHOLAMINE UPTAKE BY RAT BRAIN SYNAPTOSOMES: STUDIES WITH RIGID ANALOGS OF AMPHETAMINE. 120357 02-03



# Subject Index

# Psychopharmacology Abstracts

## RESEARCH

- GUIDELINES FOR PSYCHOLOGISTS FOR THE USE OF DRUGS IN RESEARCH. 119546 02-17
- PROGRESS REPORT ON THE ASSESSMENT PROGRAM OF THE NIAH ADDICTION RESEARCH CENTER. (UNPUBLISHED PAPER). 123040 02-17
- DRUG THERAPY OF CLINICAL DEPRESSIONS - CURRENT STATUS AND IMPLICATIONS FOR RESEARCH ON NEUROPHARMACOLOGY OF THE AFFECTIVE DISORDERS. 127220 02-09
- LITHIUM CARBONATE PROPHYLAXIS IN AFFECTIVE DISORDERS. (CLINICAL VERSUS RESEARCH APPLICATIONS). 127880 02-09
- JULIUS AXELROD: A TRIUMPH FOR CREATIVE RESEARCH. 133098 02-17
- LSA PSYCHOTHERAPY: A REVIEW OF THE LITERATURE AND SOME PROPOSALS FOR FUTURE RESEARCH. 133576 02-12

## RESERPINE

- EFFECT OF RESERPINE ON THE TRANSPORT OF 5-HYDROXYTRYPTAMINE TO THE RAT BRAIN. 119305 02-03
- THE EFFECT OF IMMUNOSYPHATECTOMY ON THE RESPONSES OF THE MOUSE TO RESERPINE AND VARIOUS ANTIDEPRESSANT AND STIMULANT DRUGS. 120011 02-03
- BEHAVIORAL AND BIOCHEMICAL EFFECTS OF PREFERENTIALLY PROTECTING MONOAMINES IN THE BRAIN AGAINST THE ACTION OF RESERPINE. 120231 02-03
- RESERPINE INDUCED ALTERATIONS IN BRAIN AMINES AND THEIR RELATIONSHIP TO CHANGES IN THE INCIDENCE OF MINIMAL ELECTROSHOCK SEIZURES IN MICE. 120360 02-03
- BRAIN SEROTONIN AND NOREPINEPHRINE AFTER CONVULSIONS AND RESERPINE. 120526 02-03
- RESERPINE FOR TARDIVE DYSKINESIA. 120855 02-13
- PRELIMINARY NOTE: CHANGES IN RNA CONTENT OF SYMPATHETIC GANGLION CELLS OF RESERPINE PRETREATED RATS. 121283 02-03
- BRAIN STEM SEROTONIN DEPLETION AND PONTO-GENICULO-OCCIPITAL WAVE ACTIVITY IN THE CAT TREATED WITH RESERPINE. 132684 02-03
- AN ANALYSIS OF THE EFFECT OF RESERPINE UPON PONTO-GENICULO-OCCIPITAL WAVE ACTIVITY IN THE CAT. 132685 02-03
- EXPERIMENTAL STUDIES ON THE MECHANISM OF RESERPINE ACTION. 133959 02-03

## RESERPINIZED

- EFFECT OF MELIPRAMINE ON CARBOHYDRATE AND MONOAMINE METABOLISM IN BRAIN OF RESERPINIZED RATS. 121878 02-03
- EFFECT OF MELIPRAMINE ON THE SEROTONIN CONTENT IN THE BRAIN OF RESERPINIZED RATS. 133961 02-03

## RESIDUAL

- FLUSPIRILENE AND PIPOTHIAZINE UNDECYLENATE, TWO LONG-ACTING INJECTABLE NEUROLEPTICS: A DOUBLE-BLIND CONTROLLED TRIAL IN RESIDUAL SCHIZOPHRENIA. 121544 02-08

## RESILIENCE

- THE RESILIENCE OF FAMILY PROCESS: EFFECT OF SECobarbital I. METHOD AND FINDINGS. (UNPUBLISHED PAPER). 134129 02-14

## RESISTANT

- SLEEP OF SEVEN PHENOTHIAZINE RESISTANT, DRUG-FREE CHRONIC SCHIZOPHRENICS. 124257 02-17

## RESPECTIVE

- THE RESPECTIVE INVOLVEMENT OF NORADRENALINE AND ITS DEAMINATED METABOLITES IN WAKING AND PARADOXICAL SLEEP: A NEUROPHARMACOLOGICAL MODEL. 119683 02-03

## RESPIRATION

- EFFECTS OF MORPHINE AND CALCIUM ON RESPIRATION OF RAT BRAIN SLICES. 118999 02-03

## RESPIRATORY

- CERTAIN OBSERVATIONS ON INTERRELATIONSHIPS BETWEEN RESPIRATORY AND CARDIOVASCULAR EFFECTS OF (-) DELTA9-TRANS-TETRAHYDROCANNABINOL. 122394 02-05
- CALCIUM EFFLUX AND RESPIRATORY INHIBITION IN BRAIN MITOCHONDRIA: EFFECTS OF CHLORPROMAZINE METABOLITES. 122535 02-03

## RESPIRATORY EFFECTS OF CHLORPROMAZINE IN UNANESTHETIZED DECEREBRATE CATS.

133292 02-03

## RESPONSE

- INAPPROPRIATE RESPONSE OF DRUG ADDICTS TO CARDIOTHORACIC SURGERY. 119039 02-15
- PHYSIOLOGICAL DISPOSITION OF ISOERGINE (FROM ARGYREIA-NERVOSA (BURM. F.) BOJER-CONVOLVULACEAE) AND ITS EFFECT ON THE CONDITIONED AVOIDANCE RESPONSE IN RATS. 120012 02-03
- PREDICTION OF RESPONSE TO PHENOTHIAZINES IN SCHIZOPHRENIA: A CROSS VALIDATION STUDY. 120498 02-08
- CATECHOLAMINE METABOLISM, DEPRESSIVE ILLNESS AND DRUG RESPONSE. 120992 02-13
- THYROID FUNCTION AND THE RESPONSE TO LIOthyronine IN DEPRESSION. 120994 02-13
- THE CONCURRENT EFFECTS OF SCOPOLAMINE ON SPONTANEOUS MOTOR ACTIVITY AND THE ACQUISITION OF AN ACTIVE AVOIDANCE RESPONSE. 121276 02-04
- EFFECTS OF PENTOBARBITAL ON THE VISUAL EVOKED RESPONSE IN THE AVIAN OPTIC TECTUM. 122012 02-03
- STRIATONIGRAL DEGENERATION RESPONSE TO LEVODOPA THERAPY. 122171 02-11
- EFFECTS OF METHAMPHETAMINE ON WELL-PRACTICED DISCRIMINATION CONDITIONING OF THE EYELID RESPONSE. 122397 02-14
- PREDICTORS OF AMITRIPTYLINE RESPONSE IN OUTPATIENT DEPRESSIVES. 122426 02-14
- ALTERED RESPONSE TO APOMORPHINE IN 6-HYDROXYDOPAMINE TREATED RATS. 122444 02-03
- FACTORS INFLUENCING RESPONSE TO MAJOR TRANQUILIZER MEDICATIONS. 123887 02-09
- DAZE REACTION: PROLONGED RESPONSE TO PSYCHEDELICS. (UNPUBLISHED PAPER). 125199 02-15
- SOME FEATURES OF THE AUDITORY EVOKED RESPONSE IN SCHIZOPHRENICS. 126225 02-13
- 1. SCHEDULE DEPENDENT EFFECTS: EFFECTS OF DRUGS, AND MAINTENANCE OF RESPONDING WITH RESPONSE PRODUCED ELECTRIC SHOCKS. 127213 02-04
- HYPERKINETIC ADULT: STUDY OF THE PARADOXICAL AMPHETAMINE RESPONSE. 128875 02-11
- ABERRANT RESPONSE TO DIAZEPAM: A NEW SYNDROME. 129967 02-15
- CHLORPROMAZINE INDUCED ALTERATIONS OF CARBOHYDRATE METABOLISM: EFFECT OF CHLORPROMAZINE PRETREATMENT ON THE INSULIN RESPONSE TO GLUCOSE AND TOLBUTAMIDE IN THE ADRENALECTOMIZED RAT. (PH.D. DISSERTATION). 130182 02-03
- THE EFFECTS OF CHOLINERGIC AGENTS UPON BEHAVIOR CONTROLLED BY AN AVOIDANCE SCHEDULE THAT EMPLOYS SIGNAL RESPONSE INDEPENDENT SHOCK. 131449 02-04
- MULTIPLE REGRESSION TECHNIQUES IN PREDICTING PATIENT RESPONSE TO PSYCHOPHARMACOLOGIC DRUGS. 133644 02-16
- CHRONIC EFFECTS OF SINGLE NITROGEN MUSTARD INJECTION ON THE ACTIVITY RESPONSE OF ALBINO RATS. 134101 02-04

## RESPONSES

- THE EFFECT OF IMMUNOSYPHATECTOMY ON THE RESPONSES OF THE MOUSE TO RESERPINE AND VARIOUS ANTIDEPRESSANT AND STIMULANT DRUGS. 120011 02-03
- PSYCHOPHYSIOLOGIC RESPONSES OF SCHIZOPHRENICS TO DRUGS. 120121 02-08
- PHYSOSTIGMINE AND 1,1 DIMETHYL-4-PHENYLPIPERAZINIUM INDUCED PRESSOR RESPONSES AND CATECHOLAMINE RELEASE IN 6-HYDROXYDOPAMINE TREATED RATS. 120234 02-03
- EFFECT OF MELANOCYTE STIMULATING HORMONE ON THE CORTICAL SOMATIC EVOKED RESPONSES IN MAN. 121280 02-13
- THE EFFECT OF MORPHINE ON PRIMARY SOMATOSENSORY EVOKED RESPONSES IN THE RAT CEREBRAL CORTEX. 121281 02-04

- MICROCIRCULATORY RESPONSES IN THE BAT WING TO GLUCAGON WITH AND WITHOUT BARBITURATE ANESTHESIA (36515). 121289 02-03
- PSYCHOPATHY AND PHYSIOLOGICAL RESPONSES TO ADRENALIN. 122371 02-11
- EFFECTS OF CHLORDIAZEPoxide ON PASSIVE AVOIDANCE RESPONSES IN RATS. 123939 02-04
- CHLORDIAZEPoxide PLASMA LEVELS AND CLINICAL RESPONSES. 127857 02-14
- EFFECTS OF LITHIUM CHLORIDE ON LEARNED RESPONSES: ACQUISITION, RETENTION, AND EXPRESSION. 128338 02-04
- EFFECT OF SALICYLATE ON AUDITORY DETECTION THRESHOLDS MEASURED BY CONDITIONED AVOIDANCE RESPONSES: SENSORY IMPAIRMENT OR MOTIVATION DECREMENT 132543 02-03
- EFFECTS OF ADRENERGIC BLOCKADE ON CARDIOVASCULAR RESPONSES TO ETHANOL AND ACETALDEHYDE. 133301 02-03
- EXCITATORY RESPONSES FOLLOWING INTRACAUDATE INJECTION OF N-METHYL-DL-ASPARTIC ACID. 133302 02-02
- A POSSIBLE CAUDATE CHOLINERGIC MECHANISM IN TWO INSTRUMENTAL CONDITIONED RESPONSES. 133471 02-04
- RESPONSIBLE**  
CENTRAL NERVOUS SYSTEM MECHANISMS RESPONSIBLE FOR BLOOD PRESSURE ELEVATION INDUCED BY P-CHLOROPHENYLALANINE. 119161 02-03
- RESTLESSNESS**  
TREATMENT OF RESTLESSNESS AND MOODINESS IN CHILDREN. 125954 02-14
- RESTRAINT**  
GASTRIC LESIONS INDUCED BY RESTRAINT AND COLD EXPOSURE: ARE CENTRAL ADRENERGIC MECHANISMS INVOLVED. (UNPUBLISHED PAPER). 129461 02-03
- GASTRIC LESIONS INDUCED BY RESTRAINT AND COLD EXPOSURE: A STUDY OF CENTRAL MONOAMINERGIC MECHANISM. (UNPUBLISHED PAPER). 132367 02-03
- USE OF PERPHENAZINE IN PSYCHIATRIC EMERGENCIES: THE CONCEPT OF CHEMICAL RESTRAINT. 132957 02-17
- RETARD**  
CONTRIBUTION TO LONG-TERM THERAPY FOR SCHIZOPHRENIC PSYCHOSES WITH RETARD NEUROLEPTICS. 121602 02-08
- CLINICAL TESTING OF A RETARD NEUROLEPTIC: FLUPHENAZINE ENANTHATE (MODITEN-RETARD, SQUIBB LAB.). 122306 02-07
- CLINICAL STUDY OF THE ACTION OF THIORIDAZINE RETARD POLFA. 133462 02-07
- RETARDED**  
EXPERIMENTAL PSYCHOCLINICAL TREATMENT OF THE SEVERELY MENTALLY RETARDED WITH ARGININE-N-ACETYL-ASPARTATE (AAA). 132772 02-11
- RETENTION**  
EFFECTS OF LITHIUM CHLORIDE ON LEARNED RESPONSES: ACQUISITION, RETENTION, AND EXPRESSION. 128338 02-04
- THE USE OF ANTIHISTAMINES FOR THE ALLEVIATION OF URINARY RETENTION CAUSED BY PSYCHOTROPIC DRUGS. 131574 02-15
- RETICULAR**  
INTERACTION OF THE EFFECT OF LYSERGIC ACID DIETHYLAMIDE AND AMINAZINE AT THE LEVEL OF INDIVIDUAL NEURONS OF THE MIDBRAIN RETICULAR FORMATION. 134457 02-03
- RETINA**  
EFFECTS OF PICROTOXIN AND STRYCHNINE UPON ELECTRICAL ACTIVITY OF THE PROXIMAL RETINA. 121968 02-03
- RETINOPATHY**  
PIGMENTARY RETINOPATHY ASSOCIATED WITH THIORIDAZINE ADMINISTRATION. 120823 02-15
- RETROGRADE**  
RETROGRADE AMNESIA FOR DISCRIMINATED TASTE AVERSIONS: A MEMORY DEFICIT. 120556 02-04
- REVERSAL**  
REVERSAL LEARNING FACILITATED BY A SINGLE INJECTION OF LYSERGIC ACID DIETHYLAMIDE (LSD-25) IN THE RAT. 121303 02-04
- DESYNCHRONIZED SLEEP DEPRIVATION: LEARNING DEFICIT AND ITS REVERSAL BY INCREASED CATECHOLAMINES. 121361 02-04
- DRUG EFFECTS ON BASELINE GO/NO-GO DISCRIMINATION AND SERIAL DISCRIMINATION REVERSAL LEARNING. 131285 02-04
- THE INTERACTION BETWEEN DESMETHYLIMIPRAMINE AND GUANETHIDINE ON THE RABBIT ILEUM. THE IMPORTANCE OF THE NORADRENALINE UPTAKE PROCESS IN THE REVERSAL OF GUANETHIDINE INDUCED ADRENERGIC NEURONE BLOCKADE. 133214 02-03
- REVIEW**  
THE USE OF METHYLDOPA IN SCHIZOPHRENIA: A REVIEW AND COMPARATIVE STUDY. 120263 02-08
- BIOCHEMISTRY OF DEPRESSION (A REVIEW OF THE LITERATURE). 120821 02-13
- THERAPEUTIC APPROACHES TO TARDIVE DYSKINESIA: A REVIEW OF THE LITERATURE. 126229 02-14
- HYPERTENSIVE EPISODES AFTER ADDING METHYLPHENIDATE (RITALIN) TO TRICYCLIC ANTIDEPRESSANTS: (REPORT OF THREE CASES AND REVIEW OF CLINICAL ADVANTAGES). 131348 02-15
- AMANTADINE IN PARKINSONS DISEASE: REVIEW OF MORE THAN TWO YEARS EXPERIENCE. 131948 02-11
- TREATMENT OF TOURETTES SYNDROME: WITH HALOPERIDOL, REVIEW OF 34 CASES. 131960 02-09
- TREATMENT OF DEPRESSIONS WITH CHLORIMIPRAMINE: LITERATURE REVIEW AND CLINICAL STUDIES. 133315 02-07
- LSD PSYCHOTHERAPY: A REVIEW OF THE LITERATURE AND SOME PROPOSALS FOR FUTURE RESEARCH. 133576 02-12
- DISULFIRAM LIKE EFFECTS OF TRICHOMONACIDAL DRUGS: A REVIEW AND DOUBLE-BLIND STUDY. 133603 02-11
- THE CATALEPTIC STATE INDUCED BY KETAMINE: A REVIEW OF THE NEUROPHARMACOLOGY OF ANESTHESIA. 133743 02-03
- RHESUS**  
MECHANISMS FOR THE EFFLUX OF 14C-DOPA AND 14C-DOPAMINE FROM THE CSF OF RHESUS MONKEYS. 118853 02-03
- THE ONTOGENY OF 14C-DOPAMINE CLEARANCE FROM THE CEREBRAL VENTRICLES OF DEVELOPING RHESUS MONKEYS. 120218 02-03
- RHYTHMIC**  
RHYTHMIC ACTIVITY OF THE VESTIBULO-OCULOMOTOR SYSTEM INDUCED BY A CHOLINERGIC DRUG. 132164 02-03
- RIBONUCLEASE**  
DECREASE OF RIBONUCLEASE ACTIVITY OF ISOLATED RAT LIVER CYTOPLASMIC RIBOSOMES AFTER THE PHENOBARBITAL ADMINISTRATION. 121326 02-03
- RIBONUCLEIC**  
THE DEVELOPMENT OF FIXED-RATIO PERFORMANCE UNDER THE INFLUENCE OF RIBONUCLEIC ACID. 129423 02-04
- RIBOSOMES**  
DECREASE OF RIBONUCLEASE ACTIVITY OF ISOLATED RAT LIVER CYTOPLASMIC RIBOSOMES AFTER THE PHENOBARBITAL ADMINISTRATION. 121326 02-03
- RIFAMPIN**  
RIFAMPIN WITH DISULFIRAM. 120977 02-15
- RIGID**  
STERIC REQUIREMENTS FOR CATECHOLAMINE UPTAKE BY RAT BRAIN SYNAPTOSOMES: STUDIES WITH RIGID ANALOGS OF AMPHETAMINE. 120357 02-03
- RIGIDITY**  
DEPRESSION BY AMANTADINE OF DRUG-INDUCED RIGIDITY IN THE RAT. 132681 02-03
- RISK**  
HISTORY OF DEPRESSION AS A RISK FACTOR FOR DEPRESSION WITH ORAL CONTRACEPTIVES AND DISCONTINUANCE. 125962 02-14
- ITALIN**  
THE EFFECT OF METHYLPHENIDATE (RITALIN) ON SUSTAINED ATTENTION IN HYPERACTIVE CHILDREN. 122198 02-11

## Subject Index

- HYPERTENSIVE EPISODES AFTER ADDING METHYLPHENIDATE (RITALIN) TO TRICYCLIC ANTIDEPRESSANTS: (REPORT OF THREE CASES AND REVIEW OF CLINICAL ADVANTAGES.** 131348 02-15
- RNA**
- PRELIMINARY NOTE: CHANGES IN RNA CONTENT OF SYMPATHETIC GANGLION CELLS OF RESERPINE PRETREATED RATS. 121283 02-03
- EFFECT OF ACTH ON THE SYNTHESIS OF RAPIDLY LABELLED RNA IN THE NERVOUS SYSTEM OF MICE. 132695 02-03
- RO-4-4602**
- INHIBITION OF HEPATIC MICROSOMAL DRUG METABOLISM BY THE HYDRAZINES RO-4-4602, MK-486, AND PROCARBAZINE HYDROCHLORIDE. 132893 02-03
- RODENTS**
- SOME PHARMACOLOGICAL AND TOXICOLOGICAL EFFECTS OF 1-TRANS-DELTA8-THC AND 1-TRANS-DELTA9-TETRAHYDROCANNABINOL IN LABORATORY RODENTS. 133290 02-05
- ROLE**
- HYPOTHETICAL ROLE OF DEAMINATED METABOLITES OF NORADRENALINE IN PGO SPIKING AND PS. 119392 02-03
- THE ROLE OF METABOLISM IN TEMPERATURE DEPENDENT SUPERSENSITIVITY OF GUINEA-PIG ATRIA TO SYMPATHOMIMETIC AMINES. 120235 02-03
- ROLE OF BRAIN AMINES IN LEARNING ASSOCIATED WITH AMPHETAMINE STATE. 122201 02-04
- ROLE OF ANTIDEPRESSANTS AND NEUROLEPTICS IN THE TREATMENT OF DEPRESSION. 122976 02-09
- THE ROLE OF THE AMYGDALA IN ESCAPE AVOIDANCE BEHAVIORS. 127344 02-04
- ETHANOL METABOLISM IN VIVO AND THE ROLE OF HEPATIC MICROSOMAL ETHANOL OXIDATION. 133605 02-03
- ROUTE**
- ROUTE OF ADMINISTRATION AND DRUG METABOLISM. 122241 02-03
- ROUTES**
- DELTA9-TETRAHYDROCANNABINOL: TEMPORAL CORRELATION OF THE PSYCHOLOGIC EFFECTS AND BLOOD LEVELS AFTER VARIOUS ROUTES OF ADMINISTRATION. 131610 02-14
- RO4-4602**
- INHIBITION OF DOPA DECARBOXYLATION BY RO4-4602, MK-485 AND MK-486 IN HUMAN LIVER HOMOGENATES. 122081 02-03
- RUBIDIUM**
- RUBIDIUM: BIOCHEMICAL, BEHAVIORAL, AND METABOLIC STUDIES IN HUMANS. 134111 02-09
- RUGULOVASINE**
- PHARMACOLOGICAL STUDY OF HYDROGENATED RUGULOVASINE A AND B HYDROCHLORIDES: CENTRAL AND PERIPHERAL ACTIONS. 130912 02-03
- PHARMACOLOGICAL STUDIES OF NEW INDOLE ALKALOIDS, RUGULOVASINE A AND B HYDROCHLORIDE: EFFECTS OF BOTH ALKALOIDS ON CARDIOVASCULAR AND CENTRAL NERVOUS SYSTEM, AND SMOOTH MUSCLES. 133217 02-02
- S-TRIAZOLOBENZODIAZEPINES**
- STRUCTURE-ACTIVITY RELATIONSHIP OF S-TRIAZOLOBENZODIAZEPINES IN CENTRAL NERVOUS DEPRESSANT ACTION. 130910 02-03
- S-1530**
- PHARMACOLOGICAL STUDIES ON 1-METHYL-7-NITRO-5-PHENYL-1,3-DIHYDRO-2H 1,4-BENZODIAZEPIN-2-ONE (S-1530). 133670 02-02
- SACRAL**
- THE MICROELECTROPHORETIC ADMINISTRATION OF NORADRENALINE, 5-HYDROXYTRYPTAMINE, ACETYLCHOLINE AND GLYCINE TO SACRAL PARASYMPATHETIC PREGANGLIONIC NEURONS. 132153 02-03
- SAFETY**
- A CLINICAL EVALUATION OF THE HYPNOTIC EFFICACY AND SAFETY OF MEBUTAMATE. 128341 02-11
- SAFETY OF DISULFIRAM (ANTABUSE). 131617 02-15

## Psychopharmacology Abstracts

- SALICYLATE**
- EFFECT OF SALICYLATE ON AUDITORY DETECTION THRESHOLDS MEASURED BY CONDITIONED AVOIDANCE RESPONSES: SENSORY IMPAIRMENT OR MOTIVATION DECREMENT 132543 02-03
- SALTS**
- THE EFFECTS OF PHENOBARBITAL ON BILE SALTS AND BILIRUBIN IN PATIENTS WITH INTRAHEPATIC AND EXTRAHEPATIC CHOLESTASIS. 121580 02-13
- VARIATIONS IN BLOOD AND URINARY ELECTROLYTES IN THE COURSE OF TREATMENT WITH LITHIUM SALTS. 122313 02-13
- LITHIUM SALTS IN PSYCHIATRIC THERAPY: CONCERNING THE CURATIVE AND PREVENTIVE TREATMENT. 122315 02-09
- THE PHARMACOKINETICS OF LITHIUM SALTS IN ACUTE STRAIN TESTS IN HEALTHY SUBJECTS. 133356 02-13
- SAMPLE**
- SOME EFFECTS OF (-) DELTA9-TRANS-TETRAHYDROCANNABINOL ON DELAYED MATCHING TO SAMPLE PERFORMANCE IN CHIMPANZEES. (UNPUBLISHED PAPER). 126242 02-04
- SC-13639**
- CENTRAL ANTICHOLINERGIC ACTIVITY OF: 2,2-DIPHENYL 4-(3-AZABICYCLONON-3-YL) BUTYRAMIDE HYDROCHLORIDE (SC-13639). 133303 02-02
- SCALE**
- PREDICTION OF PSYCHIATRIC HOSPITALIZATION: II. THE HOSPITALIZATION PRONENESS SCALE: A CROSS VALIDATION. 134204 02-08
- SCH-12041**
- STUDY OF THE TERATOGENIC POTENTIAL OF DIAZEPAM AND SCH-12041. 121579 02-05
- SCH-12679**
- A CLINICAL TRIAL OF BENZAZEPINE (SCH-12679) IN ACUTE SCHIZOPHRENIC PATIENTS. 118986 02-08
- SCHEDULE**
- THE ACTION OF IMIPRAMINE, AMITRIPTYLINE, DOXEPIN AND BUTIRIPTYLINE IN AN OPERANT CONDITIONING SCHEDULE. 120014 02-04
- EFFECTS OF TRIHEXYPHENIDYL ON SCHEDULE INDUCED ALCOHOL DRINKING BY RATS. 125531 02-03
1. SCHEDULE DEPENDENT EFFECTS: EFFECTS OF DRUGS, AND MAINTENANCE OF RESPONDING WITH RESPONSE PRODUCED ELECTRIC SHOCKS. 127213 02-04
- THE EFFECTS OF CHOLINERGIC AGENTS UPON BEHAVIOR CONTROLLED BY AN AVOIDANCE SCHEDULE THAT EMPLOYS SIGNAL RESPONSE INDEPENDENT SHOCK. 131449 02-04
- SCHEDULE CONTROLLED AND DRUG-INDUCED RELEASE OF NOREPINEPHRINE-7-3H INTO THE LATERAL VENTRICLE OF RATS. 132689 02-03
- BIPHASIC EFFECTS OF DELTA9-TETRAHYDROCANNABINOL ON VARIABLE INTERVAL SCHEDULE PERFORMANCE IN RATS. (UNPUBLISHED PAPER) 133171 02-04
- SCHEDULE-DEPENDENT**
- SCHEDULE-DEPENDENT EFFECTS IN AMPHETAMINE AND MORPHINE SELF-ADMINISTRATION BY SQUIRREL MONKEY. 131446 02-04
- SCHEDULES**
- DRUGS AND PUNISHED RESPONDING I: RATE-DEPENDENT EFFECTS UNDER MULTIPLE SCHEDULES. 128323 02-04
- SCHIZO-AFFECTIVES**
- A COMPARISON OF LITHIUM CARBONATE AND CHLORPROMAZINE IN THE TREATMENT OF EXCITED SCHIZO-AFFECTIVES. 122662 02-08
- SCHIZOKINESIS**
- REDUCTION OF ANXIETY IN GENETICALLY TIMID DOGS: DRUG-INDUCED SCHIZOKINESIS AND AUTOKINESIS. 132527 02-04
- SCHIZOPHRENIA**
- SERUM TRANSAMINASES AND ALKALINE PHOSPHATASE IN SCHIZOPHRENIA. 118934 02-08
- PERFORMANCE TESTS IN A STUDY OF PHENOTHIAZINES IN SCHIZOPHRENIA: CAVEATS AND CONCLUSIONS. 120084 02-08
- A STRATEGY FOR THE STUDY OF BEHAVIORAL MECHANISMS OF ANTIPSYCHOTIC DRUG ACTION IN SCHIZOPHRENIA. 120122 02-08
- THE USE OF METHYLDOPA IN SCHIZOPHRENIA: A REVIEW AND COMPARATIVE STUDY. 120263 02-08

- PREDICTION OF RESPONSE TO PHENOTHIAZINES IN SCHIZOPHRENIA: A CROSS VALIDATION STUDY. 120698 02-08
- FLUSPIRILENE AND PIPOTHIAZINE UNDECYLENATE, TWO LONG-ACTING INJECTABLE NEUROLEPTICS: A DOUBLE-BLIND CONTROLLED TRIAL IN RESIDUAL SCHIZOPHRENIA. 121544 02-08
- AMOTIVATIONAL SYNDROME: THE REAL MANAGEMENT PROBLEM OF SCHIZOPHRENIA. 121902 02-08
- HALOPERIDOL, CLOPENTHIXOL, AND CHLORPROMAZINE IN CHRONIC SCHIZOPHRENIA: CHEMICALLY UNRELATED ANTIPSYCHOTICS AS THERAPEUTIC ALTERNATIVES. 122209 02-08
- CHLORPROMAZINE IN CHRONIC SCHIZOPHRENIA: THE EFFECT OF AGE AND HOSPITALIZATION ON BEHAVIORAL DOSE-RESPONSE RELATIONSHIPS. 126227 02-08
- WORK STUDY IN THE ASSESSMENT OF THE EFFECTS OF PHENOTHIAZINES IN SCHIZOPHRENIA. 127856 02-08
- AMINES AND APHRODISIACS IN CHRONIC SCHIZOPHRENIA. 128347 02-08
- A ONE-YEAR TRIAL OF CLOPENTHIXOL IN CHRONIC SCHIZOPHRENIA. 130669 02-08
- PRELIMINARY STUDY OF PERPHENAZINE ENANTHATE IN THE TREATMENT OF CHRONIC SCHIZOPHRENIA. 133261 02-07
- AMPHETAMINE PSYCHOSIS: A MODEL SCHIZOPHRENIA MEDIATED BY CATECHOLAMINES. 134118 02-15
- SCHIZOPHRENIAS**  
CONDITIONED REFLEX ANALYSIS OF CHRONIC SCHIZOPHRENIAS. 131571 02-08
- SCHIZOPHRENIC**  
A CLINICAL TRIAL OF BENZAZEPINE (SCH-12679) IN ACUTE SCHIZOPHRENIC PATIENTS. 118984 02-08
- THE USE OF A SIMPLE TEST OF ATTENTION AS A MEASURE OF DRUG EFFECTS IN SCHIZOPHRENIC PATIENTS. 120085 02-08
- THE EFFECTS OF DRUGS ON OBJECTIVE MEASURES OF THOUGHT DISORDER IN SCHIZOPHRENIC PATIENTS. 120120 02-08
- COMPARISON OF THE CLINICAL AND ELECTROENCEPHALOGRAPHICAL EFFECTS OF MOLINDONE AND TRIFLUOPERAZINE IN ACUTE SCHIZOPHRENIC PATIENTS. 120824 02-08
- CONTRIBUTION TO LONG-TERM THERAPY FOR SCHIZOPHRENIC PSYCHOSES WITH RETARD NEUROLEPTICS. 121602 02-08
- IN VIVO METABOLISM OF CHLORPROMAZINE IN SCHIZOPHRENIC PATIENTS. 126709 02-13
- THE CONSEQUENCES OF PSYCHOTHERAPY FOR SCHIZOPHRENIC PATIENTS. 128408 02-08
- A CLINICAL STUDY OF MESORIDAZINE AND CHLORPROMAZINE IN RELAPSED SCHIZOPHRENIC PATIENTS. 130474 02-08
- DRUG AND SOCIOETHERAPY IN THE AFTERCARE OF SCHIZOPHRENIC PATIENTS: ONE-YEAR RELAPSE RATES. 131963 02-08
- FLUSPIRILENE IN THE TREATMENT OF CHRONIC SCHIZOPHRENIC OUTPATIENTS. 132718 02-08
- BEHAVIORAL CHANGES OF CHRONIC SCHIZOPHRENIC PATIENTS GIVEN L-5-HYDROXYTRYPTOPHAN. 132977 02-08
- PIMOZIDE: A COMPARATIVE STUDY IN THE TREATMENT OF CHRONIC SCHIZOPHRENIC PATIENTS. 133220 02-07
- GP-45795: A CONTROLLED EVALUATION IN CHRONIC SCHIZOPHRENIC PATIENTS. 134197 02-08
- SCHIZOPHRENICS**  
AUDITORY SIGNAL DETECTION IN SCHIZOPHRENICS. 120081 02-14
- PSYCHOPHYSIOLOGIC RESPONSES OF SCHIZOPHRENICS TO DRUGS. 120121 02-08
- EVALUATING THE LONG-TERM NEED FOR ANTIPARKINSON DRUGS BY CHRONIC SCHIZOPHRENICS. 120699 02-08
- THE VARIABLE EFFECTS OF LSD-25 ON THE BEHAVIOR OF A HETEROGENEOUS GROUP OF CHILDHOOD SCHIZOPHRENICS. 121403 02-12
- CLINICAL EFFECTS OF MEPIPAZOL ON HOSPITALIZED CHRONIC SCHIZOPHRENICS. 122199 02-07
- SLEEP OF SEVEN PHENOTHIAZINE RESISTANT, DRUG-FREE CHRONIC SCHIZOPHRENICS. 124257 02-17
- SOME FEATURES OF THE AUDITORY EVOKED RESPONSE IN SCHIZOPHRENICS. 126225 02-13
- PREMORBID ADJUSTMENT, PHENOTHIAZINE TREATMENT, AND REMISSION IN ACUTE SCHIZOPHRENICS. 126228 02-08
- THE EFFECTS OF CONJUNCTIVAL INSTILLATION OF ESERINE AND HOMATROPINE ON PUPILLARY REACTIVITY IN SCHIZOPHRENICS. 127520 02-13
- CHANGES IN STAFF ANXIETY AND ATTITUDES DURING A DOUBLE-BLIND STUDY OF HALOPERIDOL IN ACUTE SCHIZOPHRENICS WITHIN A STRUCTURED MILIEU. 128349 02-08
- AUDITORY SIGNAL DETECTION IN PARANOID AND NONPARANOID SCHIZOPHRENICS. 129838 02-08
- EVALUATION OF PIPERACETAZINE (GUIDE) INJECTION IN ACUTE SCHIZOPHRENICS. 132896 02-08
- IMPORTANCE OF ADEQUATE DOSAGE DETERMINATION OF DRUG EFFICACY: TRIAL OF A NEW BUTYROPHENONE COMPOUND ON ACUTE SCHIZOPHRENICS. 133263 02-07
- SCIATIC**  
LOCAL SYNTHESIS AND BREAKDOWN OF NORADRENALINE IN CONSTRICTED RAT SCIATIC NERVES. 122574 02-03
- SCIENTIFIC**  
INTRODUCTION TO SCIENTIFIC MODELS AND PSYCHOPATHOLOGY. 126934 02-06
- THE IMPACT OF SCIENTIFIC MODELS ON CLINICAL PSYCHOPHARMACOLOGY: A PSYCHIATRISTS VIEW. 126937 02-17
- THE IMPACT OF SCIENTIFIC MODELS ON CLINICAL PSYCHOPHARMACOLOGY: A PSYCHIATRISTS VIEW. 126938 02-17
- THE IMPACT OF SCIENTIFIC MODELS ON CLINICAL PSYCHOPHARMACOLOGY: AN INTERNISTS VIEW. 126939 02-17
- THE IMPACT OF SCIENTIFIC MODELS ON CLINICAL PSYCHOPHARMACOLOGY: A PHARMACOLOGISTS VIEW. 126940 02-17
- SCOPOLAMINE**  
PREINJECTION TIME OF SCOPOLAMINE AND STEP-DOWN LATENCY IN MICE. 120097 02-04
- THE CONCURRENT EFFECTS OF SCOPOLAMINE ON SPONTANEOUS MOTOR ACTIVITY AND THE ACQUISITION OF AN ACTIVE AVOIDANCE RESPONSE. 121276 02-04
- SCOPOLAMINE: EFFECTS ON CONDITIONED SUPPRESSION. 121277 02-04
- ACQUISITION AND PERFORMANCE EFFECTS OF SCOPOLAMINE AND OF TREATMENT WITHDRAWAL IN AVOIDANCE SITUATIONS. 122039 02-04
- THE EFFECTS OF SCOPOLAMINE ON THE DELAYED RECALL OF NUMBERS TESTS. 126745 02-14
- THE EFFECT OF SCOPOLAMINE ON THE KAMIN EFFECT: A TEST OF THE PARASYMPATHETIC OVERREACTION HYPOTHESIS. 127023 02-04
- EFFECTS OF SCOPOLAMINE ON SPATIAL DOUBLE ALTERNATION IN RATS. 131132 02-04
- PERMANENT FACILITATION OF AVOIDANCE BEHAVIOR BY D-AMPHETAMINE AND SCOPOLAMINE. 133377 02-04
- AMNESIC EFFECTS OF SCOPOLAMINE. 133726 02-04
- SCOTOPHOBIN**  
COMMENTS ON THE CHEMISTRY OF SCOTOPHOBIN. 121851 02-01
- SEARCH**  
NARCOTIC ANTAGONISTS: THE SEARCH ACCELERATES. 133082 02-13
- SECOBARBITAL**  
DESTRUCTION OF CYTOCHROME-P-450 BY SECOBARBITAL AND OTHER BARBITURATES CONTAINING ALLYL GROUPS. 121551 02-03
- THE RESILIENCE OF FAMILY PROCESS: EFFECT OF SECOBARBITAL I. METHOD AND FINDINGS. (UNPUBLISHED PAPER). 134129 02-14
- SECONDARY**  
IDENTIFICATION AND TREATMENT OF ACUTE PSYCHOTIC STATES SECONDARY TO THE USAGE OF OVER-THE-COUNTER SLEEPING PREPARATIONS. 120269 02-15



## Subject Index

## Psychopharmacology Abstracts

- CLINICAL STUDY OF ARGININE ASPARTATE IN SECONDARY SEXUAL IMPOTENCIES. 132753 02-11
- SECTARIANISM**  
BIOLOGIC PSYCHIATRY IN PERSPECTIVE: THE DANGERS OF SECTARIANISM IN PSYCHIATRY. V. SOME INFERRED TRENDS. 129401 02-17
- SECTIONS**  
CHANGES IN THE NEURONS OF CERTAIN SECTIONS OF THE RAT BRAIN DURING MOTOR STIMULATION INDUCED BY PHENAMINE. 133958 02-03
- SEDALUM**  
SEDALUM IN PSYCHIATRY IN ITS CAPACITY AS TRANQUILIZER AND NEUROLEPTIC. 133173 02-07
- SEDATION**  
DIAZEPAM SEDATION FOR LIVER BIOPSY. 118965 02-07
- SEDATIVE**  
THE CLINICAL CHOICE OF SEDATIVE HYPNOTICS. 118899 02-15  
THE PLACE OF DOXEPIN AMONG THE ANXIOLYTIC - SEDATIVE DRUGS. 119170 02-13  
FURTHER PHARMACOLOGICAL STUDY ON ANTIAGGRESSIVE, SEDATIVE AND MUSCLE RELAXANT 8-CHLORO-6-PHENYL-4H-S-TRIAZOLOBENZODIAZEPINE (D-407A) IN EXPERIMENTAL ANIMALS: COMPARATIVE STUDY ON POTENCY AND DURATION. 130909 02-04
- SEDATIVES**  
DRUG THERAPY: SEDATIVES AND TRANQUILIZERS. 129465 02-10
- SEDUXEN**  
EFFECT OF SEDUXEN ON THE FUNCTIONAL STATE OF THE ADRENAL CORTEX AND THYROID GLAND. 125265 02-04
- SEIZURE**  
PENICILLIN INDUCED SEIZURE ACTIVITY IN THE HATCHET FISH. 121966 02-03
- SEIZURES**  
RESERPINE INDUCED ALTERATIONS IN BRAIN AMINES AND THEIR RELATIONSHIP TO CHANGES IN THE INCIDENCE OF MINIMAL ELECTROSHOCK SEIZURES IN MICE. 120360 02-03  
TEMPORARY ALTERATION OF CEREBROVASCULAR PERMEABILITY TO PLASMA PROTEIN DURING DRUG-INDUCED SEIZURES. 122177 02-03  
DILANTIN, BRAIN ELECTROLYTES, THE SO-CALLED SODIUM PUMP AND SEIZURES. 132528 02-03
- SELECTION**  
DECISIONS ABOUT DRUG THERAPY. III. SELECTION OF TREATMENT FOR PSYCHIATRIC INPATIENTS. 131961 02-14
- SELECTIVE**  
SELECTIVE INCREASE IN AVOIDANCE RESPONDING BY METHAMPHETAMINE IN NAIVE RATS. 120786 02-04  
HUMAN BRAIN MONOAMINE OXIDASE: MULTIPLE FORMS AND SELECTIVE INHIBITORS. 120939 02-13  
THE EFFECTS OF SELECTIVE LESIONING OF BRAIN SEROTONIN OR CATECHOLAMINE CONTAINING NEURONES ON THE ANORECTIC ACTIVITY OF FENFLURAMINE AND AMPHETAMINE. 122243 02-03  
SYNAPTOSOMES FROM FOREBRAIN OF RATS WITH MIDBRAIN RAPHE LESIONS: SELECTIVE REDUCTION OF SEROTONIN UPTAKE. 124188 02-03  
SUBSTRATE SELECTIVE AND TISSUE SELECTIVE INHIBITION OF MONOAMINE OXIDASE. 133212 02-03
- SELF-ADMINISTRATION**  
SCHEDULE-DEPENDENT EFFECTS IN AMPHETAMINE AND MORPHINE SELF-ADMINISTRATION BY SQUIRREL MONKEY. 131446 02-04
- SELF-STIMULATION**  
EFFECTS OF CHOLINERGIC AGONISTS AND ANTAGONISTS ON SELF-STIMULATION BEHAVIOR IN THE RAT. 120560 02-04  
MORPHINE ENHANCES LATERAL HYPOTHALAMIC SELF-STIMULATION IN THE RAT. 121882 02-04  
ACTION AND INTERACTION OF CHOLINERGIC AGONISTS AND ANTAGONISTS ON SELF-STIMULATION. 133298 02-04  
ALTERATIONS BY CENTRALLY ACTING DRUGS OF THE SUPPRESSION OF SELF-STIMULATION BEHAVIOR IN THE RAT BY TETRABENAZINE, PHYSOSTIGMINE, CHLORPROMAZINE AND PENTOBARBITAL. 133473 02-04
- SEMICARBAZIDE**  
THE INFLUENCE OF SEMICARBAZIDE INDUCED DEPLETION OF GAMMA-AMINOBUTYRIC ACID ON PRESYNAPTIC INHIBITION. 121963 02-03
- SENSITIVE**  
A PIMOZIDE SENSITIVE EFFECT OF APOMORPHINE ON BODY TEMPERATURE OF THE RABBIT. 119050 02-03  
BROMINATION OF PHENOTHIAZINE TRANQUILIZERS: A METHOD FOR SENSITIVE AND SPECIFIC DETECTION. 119053 02-06
- SENSITIVITY**  
THE STABILITY AND SENSITIVITY OF MEASURES OF THOUGHT, PERCEPTION AND EMOTIONAL AROUSAL. 120118 02-08
- SENSORY**  
TESTING SOME IMPLICATIONS OF THE SENSORY PHYSIOLOGICAL MODEL OF THE TIME SENSE. 130354 02-14  
EFFECT OF SALICYLATE ON AUDITORY DETECTION THRESHOLDS MEASURED BY CONDITIONED AVOIDANCE RESPONSES: SENSORY IMPAIRMENT OR MOTIVATION DECREMENT 132543 02-03
- SEQUENTIAL**  
HEROIN INDUCED PULMONARY EDEMA: SEQUENTIAL STUDIES OF PULMONARY FUNCTION. 118897 02-15  
A DOUBLE-BLIND SEQUENTIAL COMPARISON OF DOXEPIN WITH AMITRIPTYLINE IN DEPRESSED PATIENTS. 131344 02-09  
DEPOT PHENOTHIAZINE TREATMENT IN ACUTE PSYCHOSIS: A SEQUENTIAL COMPARATIVE STUDY. 134112 02-09
- SERIAL**  
DRUG EFFECTS ON BASELINE GO/NO-GO DISCRIMINATION AND SERIAL DISCRIMINATION REVERSAL LEARNING. 131285 02-04
- SERINE**  
SYNERGY OF ETHANOL AND PUTATIVE NEUROTRANSMITTERS: GLYCINE AND SERINE. 134043 02-03
- SEROTONERGIC**  
SEROTONERGIC MECHANISMS IN PARKINSONS DISEASE. 122255 02-14  
SEROTONERGIC AND CHOLINERGIC INVOLVEMENT IN HABITUATION OF ACTIVITY AND SPONTANEOUS ALTERNATION OF RATS IN A Y-MAZE. 131131 02-03
- SEROTONIN**  
SEROTONIN SYNTHESIS WITH RAT BRAIN SYNAPTOSOMES: EFFECTS OF SEROTONIN AND MONOAMINE OXIDASE INHIBITORS. 119055 02-03  
INSOMNIA AND CEREBRAL METABOLISM OF SEROTONIN IN CAT: IN VITRO SYNTHESIS AND RELEASE OF SEROTONIN 18 H AFTER DESTRUCTION OF THE RAPHE NUCLEI. 119684 02-03  
THE EFFECTS OF CHRONIC IMIPRAMINE ADMINISTRATION ON RAT BRAIN LEVELS OF SEROTONIN, 5-HYDROXYINDOLEACETIC ACID, NOREPINEPHRINE AND DOPAMINE. 120359 02-03  
BRAIN SEROTONIN AND NOREPINEPHRINE AFTER CONVULSIONS AND RESERPINE. 120526 02-03  
BENZODIAZEPINES: ANXIETY REDUCING ACTIVITY BY REDUCTION OF SEROTONIN TURNOVER IN THE BRAIN. 121174 02-03  
DRUG DISPOSITION AS A FACTOR IN THE LOWERING OF BRAIN SEROTONIN BY CHLOROAMPHETAMINES IN THE RAT. 121204 02-03  
NARCOTIC DRUGS: EFFECTS ON THE SEROTONIN BIOSYNTHETIC SYSTEMS OF THE BRAIN. 121320 02-03  
THE EFFECTS OF SELECTIVE LESIONING OF BRAIN SEROTONIN OR CATECHOLAMINE CONTAINING NEURONES ON THE ANORECTIC ACTIVITY OF FENFLURAMINE AND AMPHETAMINE. 122243 02-03  
ALTERED METABOLISM OF SEROTONIN IN THE BRAIN OF THE RAT AFTER CHRONIC INGESTION OF D-AMPHETAMINE. 123938 02-03  
SYNAPTOSOMES FROM FOREBRAIN OF RATS WITH MIDBRAIN RAPHE LESIONS: SELECTIVE REDUCTION OF SEROTONIN UPTAKE. 124188 02-03  
6-METHOXY 1,2,3,4 TETRAHYDRO-BETA-CARBOLINE - A SEROTONIN ELEVATOR. 124272 02-03  
EFFECT OF THE IMIPRAMINE GROUP OF ANTIDEPRESSANTS ON THE SEROTONIN LEVEL AND ACTIVITY OF 5-OXYTRYPTOPHANDECARBOXYLASE IN THE BRAIN OF ALBINO RATS. 125260 02-03

- ETHANOL PREFERENCE IN THE RAT: INTERACTIONS BETWEEN BRAIN SEROTONIN AND ETHANOL, ACETALDEHYDE, PARALDEHYDE, 5-HTP AND 5-HTOL. 132682 02-04
- BRAIN STEM SEROTONIN DEPLETION AND PONTO-GENICULO-OCCIPITAL WAVE ACTIVITY IN THE CAT TREATED WITH RESERPINE. 132684 02-03
- EFFECT OF 5-HYDROXYDOPAMINE ON UPTAKE AND CONTENT OF SEROTONIN IN RAT STRIATUM. 133527 02-03
- EFFECT OF MELIPRAMINE ON THE SEROTONIN CONTENT IN THE BRAIN OF RESERPINIZED RATS. 133961 02-03
- SEROTONINERGIC**  
SEROTONINERGIC NEUROTRANSMISSION AND MORPHINE ACTIVITY. 121298 02-03
- SERUM**  
SERUM TRANSAMINASES AND ALKALINE PHOSPHATASE IN SCHIZOPHRENIA. 118934 02-08
- RELATIONSHIPS BETWEEN SERUM AND CEREBROSPINAL FLUID ANTICONVULSANT DRUG AND FOLIC ACID CONCENTRATIONS IN EPILEPTIC PATIENTS. 132710 02-13
- STUDIES ON THE INDUCTION OF SERUM HEMOPEXIN BY PENTOBARBITAL AND POLYCYCLIC HYDROCARBONS. 133733 02-03
- LITHIUM, WEIGHT GAIN, AND SERUM INSULIN IN MANIC-DEPRESSIVE PATIENTS. 134310 02-15
- SEXUAL**  
CLINICAL STUDY OF ARGININE ASPARTATE IN SECONDARY SEXUAL IMPOTENCIES. 132753 02-11
- SHEEP**  
VASOCONSTRICTION PRODUCED BY HALLUCINOGENS ON ISOLATED HUMAN AND SHEEP UMBILICAL VASCULATURE. 132994 02-13
- SHOCK**  
SHOCK ELICITED FIGHTING AND DELTA9-TETRAHYDROCANNABINOL. 122194 02-04
- PREVENTION OF TRAUMATIC SHOCK WITH LEVOMEPRAMINE UNDER EXPERIMENTAL CONDITIONS. 125263 02-03
- THE EFFECTS OF CHOLINERGIC AGENTS UPON BEHAVIOR CONTROLLED BY AN AVOIDANCE SCHEDULE THAT EMPLOYS SIGNAL RESPONSE INDEPENDENT SHOCK. 131449 02-04
- SHOCK INDUCED AGGRESSION: EFFECTS OF 6-HYDROXYDOPAMINE AND OTHER PHARMACOLOGICAL AGENTS. 132680 02-04
- MARIJUANA AND SHOCK INDUCED AGGRESSION IN RATS. 133770 02-04
- SHOCKS**  
I. SCHEDULE DEPENDENT EFFECTS: EFFECTS OF DRUGS, AND MAINTENANCE OF RESPONDING WITH RESPONSE PRODUCED ELECTRIC SHOCKS. 127213 02-04
- SHORT-TERM**  
TREATMENT OF TARDIVE DYSKINESIA: II. SHORT-TERM EFFICACY OF DOPAMINE BLOCKING AGENTS HALOPERIDOL AND THIOPROPAZATE. 122704 02-11
- NEUROPSYCHOLOGICAL AND ELECTROMYOGRAPHIC STUDIES ON THE SHORT-TERM PSYCHOTROPIC EFFECT OF L-DOPA. 133347 02-14
- SHYNESS**  
BAIT SHYNESS DURING MORPHINE DEPENDENCE. 131447 02-04
- SIDE-EFFECT**  
AKATHISIA: A SIDE-EFFECT TO BE REMEMBERED. 126502 02-15
- SIDE-EFFECTS**  
SIDE-EFFECTS FROM LEVODOPA. 121477 02-15
- SIDE-EFFECTS OF PHENOTHIAZINES. 122879 02-15
- SIDE-EFFECTS OF PHENOTHIAZINES. 122880 02-15
- SIDE-EFFECTS OF PHENOTHIAZINES. 122881 02-15
- ON THE ADMINISTRATION OF PSYCHOTROPIC DRUGS AND ITS SIDE-EFFECTS DETECTED BY LIVER FUNCTION TEST. 128952 02-08
- INHIBITION OF EXTRAPYRAMIDAL SIDE-EFFECTS OF HALOPERIDOL THROUGH THE JOINT USE OF IMIPRAMINE-TYPE DRUGS. 134326 02-15
- SIGNAL**  
AUDITORY SIGNAL DETECTION IN SCHIZOPHRENICS. 120081 02-14
- AUDITORY SIGNAL DETECTION IN PARANOID AND NONPARANOID SCHIZOPHRENICS. 129838 02-08
- THE EFFECTS OF CHOLINERGIC AGENTS UPON BEHAVIOR CONTROLLED BY AN AVOIDANCE SCHEDULE THAT EMPLOYS SIGNAL RESPONSE INDEPENDENT SHOCK. 131449 02-04
- SINGLE**  
THE USE OF A SIMPLE TEST OF ATTENTION AS A MEASURE OF DRUG EFFECTS IN SCHIZOPHRENIC PATIENTS. 120085 02-08
- AN ANALYSIS OF DRUG EFFECTS IN MICE EXPOSED TO A SIMPLE NOVEL ENVIRONMENT. 124153 02-04
- SINEQUAN**  
CLINICAL EVALUATION OF SINEQUAN. 133321 02-10
- SINGLE**  
SINGLE VERSUS REPEATED DOSAGE OF THE MINOR TRANQUILIZER CHLORDIAZEPOXIDE (LIBRIUM). 120655 02-17
- REVERSAL LEARNING FACILITATED BY A SINGLE INJECTION OF LYSERGIC ACID DIETHYLAMIDE (LSD-25) IN THE RAT. 121303 02-04
- ANTAGONISM OF PENTYLENETETRAZOL EXCITATION BY ANTICONVULSANTS ON SINGLE BRAIN STEM NEURONS. 132676 02-03
- CHRONIC EFFECTS OF SINGLE NITROGEN MUSTARD INJECTION ON THE ACTIVITY RESPONSE OF ALBINO RATS. 134101 02-04
- SINGULAR**  
HISTOENZYMOLOGIC STUDIES OF THE BRAIN TISSUES AND INTERNAL ORGANS OF EXPERIMENTAL ANIMALS IN A SINGULAR ADMINISTRATION OF LSD-25. 133505 02-03
- SIPHON**  
HABITUATION TO LIGHT AND SPONTANEOUS ACTIVITY IN THE ISOLATED SIPHON OF APLYSIA: THE EFFECTS OF SYNAPTICALLY ACTIVE PHARMACOLOGICAL AGENTS. (PH.D. DISSERTATION). 123950 02-04
- SITUATION**  
DECISIONS ABOUT DRUG THERAPY II: EXPERT OPINION IN A HYPOTHETICAL SITUATION. 126990 02-17
- SITUATIONS**  
ACQUISITION AND PERFORMANCE EFFECTS OF SCOPOLAMINE AND OF TREATMENT WITHDRAWAL IN AVOIDANCE SITUATIONS. 122039 02-04
- SIZE**  
EFFECT OF MORPHINE DOSE SIZE ON THE CONDITIONED REINFORCING POTENCY OF STIMULI PAIRED WITH MORPHINE. 126906 02-04
- SKF-525-A**  
EFFECT OF PRETREATMENT WITH SPIRONOLACTONE, PHENOBARBITAL OR BETA-DIETHYLAMINOETHYL DIPHENYL-ACETATE (SKF-525-A) ON TRITIUM LEVELS IN BLOOD, HEART AND LIVER OF RATS AT VARIOUS TIMES AFTER ADMINISTRATION OF 3H-DIGITOXIN. 121243 02-03
- INCREASED HEPATIC PHOSPHOPROTEIN PHOSPHATASE ACTIVITY INDUCED BY PHENOBARBITAL AND ITS SUPPRESSION BY CYCLOHEXIMIDE AND SKF-525-A. 121647 02-05
- SLEEP**  
THE RESPECTIVE INVOLVEMENT OF NORADRENALINE AND ITS DEAMINATED METABOLITES IN WAKING AND PARADOXICAL SLEEP: A NEUROPHARMACOLOGICAL MODEL. 119683 02-03
- EFFECTS OF DEXTROAMPHETAMINE FOLLOWING DESYNCHRONIZED SLEEP DEPRIVATION IN RATS. 119830 02-03
- ACTIVE AVOIDANCE CONDITIONING: EFFECTS OF D-DEPRIVATION (DESYNCHRONIZED SLEEP DEPRIVATION) AND OF ALTERED BRAIN CATECHOLAMINES. 119832 02-03
- DESYNCHRONIZED SLEEP DEPRIVATION: LEARNING DEFICIT AND ITS REVERSAL BY INCREASED CATECHOLAMINES. 121361 02-04
- THE EFFECT OF LORAZEPAM ON SLEEP. 121986 02-07
- ELECTROENCEPHALOGRAPHIC ACTIVATION WITH SLEEP AND METHOHXITAL: COMPARATIVE USEFULNESS IN THE DIAGNOSIS OF EPILEPSY. 122253 02-14
- THE SWITCH PROCESS IN MANIC-DEPRESSIVE ILLNESS. II. RELATIONSHIP TO CATECHOLAMINES, REM SLEEP, AND DRUGS. 122980 02-09
- EFFECTS OF PLACIDYL ON SLEEP OF NORMAL SUBJECTS. 124143 02-14

## Subject Index

- INHIBITION OF GABA TRANSAMINASE AND SLEEP IN THE RAT.**  
124160 02-03
- SLEEP OF SEVEN PHENOTHIAZINE RESISTANT, DRUG-FREE CHRONIC SCHIZOPHRENICS.**  
124257 02-17
- CHLORMETHIAZOLE, SLEEP, AND DRUG WITHDRAWAL.**  
126197 02-14
- THE EFFECT OF OXAZEPAM ON INTERRUPTED DAY SLEEP AFTER NIGHT WORK.**  
132785 02-14
- ELECTROENCEPHALOGRAPH AND BEHAVIOR OF RABBITS IN PHYSIOLOGICAL AND DRUG-INDUCED SLEEP: PART II: EEG OF THE RABBIT IN DRUG INDUCED SLEEP.**  
132829 02-04
- DIGITAL COMPUTER ANALYZED SLEEP ELECTROENCEPHALOGRAPH (SLEEP PRINTS) IN PREDICTING ANXIOLYTIC PROPERTIES OF CLORAZEPATE DIPOTASSIUM (TRANXENE).**  
132950 02-14
- THE EFFECTS OF SU-21707 ON THE SLEEP ELECTROENCEPHALOGRAPH OF NORMAL SUBJECTS.**  
132954 02-13
- INFLUENCE OF L-DOPA ON NIGHT SLEEP IN PARKINSONIAN PATIENTS.**  
133569 02-03
- ELECTROENCEPHALOGRAPH AND BEHAVIOR OF RABBITS IN PHYSIOLOGICAL AND DRUG INDUCED SLEEP: PART III: INFLUENCE OF HYPNOTICS ON SLEEP BEHAVIOR OF RABBITS; DISCUSSION AND SUMMARY.**  
133672 02-03
- SLEEPING**  
IDENTIFICATION AND TREATMENT OF ACUTE PSYCHOTIC STATES SECONDARY TO THE USAGE OF OVER-THE-COUNTER SLEEPING PREPARATIONS.  
120269 02-15
- EFFECT OF CARBARYL (1-NAPHTHYL-N-METHYLCARBAMATE) ON PENTOBARBITAL INDUCED SLEEPING TIME AND SOME LIVER MICROSOMAL ENZYMES IN WHITE LEGHORN COCKERELS.**  
121836 02-03
- PENTOBARBITONE SLEEPING TIME AFTER HALOPERIDOL AND PROMETHAZINE.**  
133305 02-03
- SLICES**  
EFFECTS OF MORPHINE AND CALCIUM ON RESPIRATION OF RAT BRAIN SLICES.  
118999 02-03
- SLOW**  
PALLIDAL AND TEGMENTAL INHIBITION OF OSCILLATORY SLOW WAVES AND UNIT ACTIVITY IN THE SUBTHALAMIC NUCLEUS.  
122204 02-03
- SMOKING**  
MARIHUANA SMOKING: CARDIOVASCULAR EFFECTS IN MAN AND POSSIBLE MECHANISMS.  
133055 02-13
- SMOOTH**  
PHARMACOLOGICAL STUDIES OF NEW INDOLE ALKALOIDS, RUGULOVASINE A AND B HYDROCHLORIDE: EFFECTS OF BOTH ALKALOIDS ON CARDIOVASCULAR AND CENTRAL NERVOUS SYSTEM, AND SMOOTH MUSCLES.  
133217 02-02
- SOCIAL**  
SOME CLINICAL AND SOCIAL ASPECTS OF LYSERGIC ACID DIETHYLAMIDE: PART I.  
121932 02-12
- SOCIOTHERAPEUTIC**  
INTERACTION BETWEEN NEUROLEPTIC THERAPY AND SOCIOTHERAPEUTIC APPROACH: AN INVESTIGATION WITH PENFLURIDOL AND HALOPERIDOL.  
133355 02-08
- SOCIOTHERAPY**  
DRUG AND SOCIOTHERAPY IN THE AFTERCARE OF SCHIZOPHRENIC PATIENTS: ONE-YEAR RELAPSE RATES.  
131963 02-08
- SODIUM**  
EFFECTS OF ANESTHETICS ON SODIUM UPTAKE INTO RAT BRAIN CORTEX IN VITRO.  
121210 02-03
- EFFECT OF MATERNALLY INJECTED SODIUM PENTOBARBITAL DURING THE EMBRYONIC PERIOD OF GESTATION ON LIVER GLYCOGEN LEVELS IN THE RAT FETUS.**  
122236 02-03
- BUTISOL SODIUM VS. LIBRIUM AMONG GERIATRIC AND YOUNGER OUTPATIENTS AND NURSING HOME PATIENTS.**  
123885 02-10
- DILANTIN, BRAIN ELECTROLYTES, THE SO-CALLED SODIUM PUMP AND SEIZURES.**  
132528 02-03

## Psychopharmacology Abstracts

- THE ELECTRIC INTERPHASIC BLOOD POTENTIAL FOR SODIUM AND POTASSIUM IONS IN PATIENTS TREATED WITH CHLORPROMAZINE FOR VARIOUS MENTAL DISORDERS.**  
133463 02-13
- SOLUTION**  
AGE AND LACK OF HANDLING AS FACTORS IN THE CONSUMPTION OF AN ETONITAZENE SOLUTION BY NAIVE RATS.  
133133 02-04
- SOMATIC**  
EFFECT OF MELANOCYTE STIMULATING HORMONE ON THE CORTICAL SOMATIC EVOKED RESPONSES IN MAN.  
121280 02-13
- SOMATOSENSORY**  
THE EFFECT OF MORPHINE ON PRIMARY SOMATOSENSORY EVOKED RESPONSES IN THE RAT CEREBRAL CORTEX.  
121281 02-04
- EFFECT OF MINOR AND MAJOR TRANQUILIZERS ON SOMATOSENSORY EVOKED POTENTIALS.**  
124152 02-13
- SOMATOSENSORY EVOKED POTENTIAL: AN OBJECTIVE INDICATOR OF THE THERAPY EFFICACY OF A NEW PSYCHOTROPIC DRUG, CLORAZEPATE DIPOTASSIUM (TRANXENE).**  
132953 02-07
- EFFECT OF STIMULATORY DRUGS ON THE SOMATOSENSORY EVOKED POTENTIAL IN MAN.**  
133348 02-13
- EFFECT OF DIISOPROPYL PHOSPHOROFUORIDATE (DFP) ON THE SOMATOSENSORY EVOKED POTENTIALS IN RATS.**  
133380 02-04
- SOPORIFIC**  
A DOUBLE-BLIND INVESTIGATION OF A NEW SOPORIFIC DRUG FOR USE WITH DEPRESSIVE PATIENTS.  
121599 02-10
- OBJECTIVE STUDY OF THE ACTION OF A SOPORIFIC.**  
133671 02-13
- SOURCE**  
ISOLATION OF METABOLITES OF L-DOPA - A POSSIBLE SOURCE OF ERROR.  
122165 02-03
- SPARSELY**  
LITHIUM THERAPY FOR MANIC-DEPRESSIVES IN A LARGE, POOR, SPARSELY POPULATED CATCHMENT AREA.  
119045 02-09
- SPASMODIC**  
SPASMODIC TORTICOLLIS AND L-DOPA: RESULTS OF THERAPEUTIC TRIAL IN SIX PATIENTS.  
119029 02-13
- SPATIAL**  
EFFECTS OF SCOPOLAMINE ON SPATIAL DOUBLE ALTERNATION IN RATS.  
131132 02-04
- SPECIES**  
SPECIES DIFFERENCE IN THE LOWERING OF BRAIN 5-HYDROXYTRYPTAMINE BY M-CHLOROAMPHETAMINE.  
119306 02-03
- STUDIES ON THE PARADOXICAL INTERACTION OF PHYSOSTIGMINE AND PENTOBARBITAL ON REGIONAL BRAIN ACETYLCHOLINE CONTENT OF VARIOUS ANIMAL SPECIES.**  
121296 02-03
- SPECIES DIFFERENCES IN THE METABOLISM OF A TRICYCLIC PSYCHOTROPIC AGENT, SQ-11290-14C.**  
133718 02-13
- EXTENT OF PLASMA PROTEIN BINDING OF AMPHETAMINE IN DIFFERENT SPECIES.**  
133780 02-13
- SPECIFIC**  
BROMINATION OF PHENOTHIAZINE TRANQUILIZERS: A METHOD FOR SENSITIVE AND SPECIFIC DETECTION.  
119053 02-06
- SPECIFIC ANTAGONISM BY DOPAMINE INHIBITORS OF ITEMS OF AMPHETAMINE INDUCED AGGRESSIVE BEHAVIOUR.**  
120791 02-04
- SPECIFICITY**  
SPECIFICITY OF THE EFFECT OF LITHIUM INJECTIONS ON THE ENTRY OF CARBON ATOMS OF GLUCOSE INTO MOUSE BRAIN IN VIVO.  
132777 02-03
- SPECTRAL**  
SPECTRAL INTERACTIONS OF MARIHUANA CONSTITUENTS (CANNABINOIDS) WITH RAT LIVER MICROSOMAL MONOOXYGENASE SYSTEM.  
122097 02-03
- EFFECTS OF ANTIHISTAMINIC AGENTS UPON THE ELECTROGRAPHIC ACTIVITY OF THE CAT BRAIN: A POWER SPECTRAL DENSITY STUDY.**  
132686 02-03
- SPERMIDINE**  
SOME PHARMACOLOGICAL PROPERTIES OF THE POLYAMINES SPERMINE AND SPERMIDINE - A REAPPRAISAL.  
122077 02-03

- SPERMINE**  
SOME PHARMACOLOGICAL PROPERTIES OF THE POLYAMINES SPERMINE AND SPERMIDINE - A REAPPRAISAL. 122077 02-03
- SPIKE**  
THE EEG AND BEHAVIORAL CONTINUUM OF THE CROCODILIAN CAIMAN-SCLEROPS. 2. EEG AND EMG SPIKE ACTIVITY. 124225 02-03
- SPIKING**  
HYPOTHETICAL ROLE OF DEAMINATED METABOLITES OF NORADRENALINE IN PGO SPIKING AND PS. 119392 02-03
- SPINAL**  
ALTERED NOREPINEPHRINE METABOLISM FOLLOWING EXPERIMENTAL SPINAL CORD INJURY. PART 2: PROTECTION AGAINST TRAUMATIC SPINAL CORD HEMORRHAGIC NECROSIS BY NOREPINEPHRINE SYNTHESIS BLOCKADE WITH ALPHA-METHYL-TYROSINE. 121067 02-03  
APOMORPHINE AND ITS EFFECTS ON THE SPINAL CORD. 121282 02-03  
EFFECT OF NEUROTROPIC AGENTS ON CHANGES IN BIOELECTRIC ACTIVITY OF THE RENAL NERVE, EVOKED BY STIMULATION OF THE DESCENDING COLUMNS OF THE SPINAL CORD. 125262 02-03
- SPINDLE-LIKE**  
SPINDLE-LIKE ACTIVITY IN THE CAT. 119835 02-17
- SPIRONOLACTONE**  
EFFECT OF PRETREATMENT WITH SPIRONOLACTONE, PHENOBARBITAL OR BETA-DIETHYLAMINOETHYL DIPHENYLPROPYL-ACETATE (SKF-525-A) ON TRITIUM LEVELS IN BLOOD, HEART AND LIVER OF RATS AT VARIOUS TIMES AFTER ADMINISTRATION OF 3H-DIGITOXIN. 121243 02-03
- SPONTANEOUS**  
EFFECTS OF CHLORDIAZEPoxide UPON SPONTANEOUS ALTERNATION AND THE HIPPOCAMPAL ELECTRICAL ACTIVITY IN WHITE RATS. 120792 02-04  
THE EFFECTS OF SOME DRUGS AFFECTING BRAIN 5-HT ON THE AGGRESSIVE BEHAVIOR AND SPONTANEOUS ELECTRICAL ACTIVITY OF THE CENTRAL NERVOUS SYSTEM OF THE ANT, FORMICA-RUFA. 120812 02-04  
THE SPONTANEOUS MOTILITY OF RATS AFTER INTRAVENTRICULAR INJECTION OF DOPAMINE. 121275 02-04  
THE CONCURRENT EFFECTS OF SCOPOLAMINE ON SPONTANEOUS MOTOR ACTIVITY AND THE ACQUISITION OF AN ACTIVE AVOIDANCE RESPONSE. 121276 02-04  
THE EFFECT OF BETA-PHENETHYLAMINE UPON SPONTANEOUS MOTOR ACTIVITY IN MICE: A DUAL EFFECT ON LOCOMOTOR ACTIVITY. 121315 02-04  
DEPRESSION OF SPONTANEOUS ACTIVITY IN GOLDFISH BY MAGNESIUM PEMOLINE. 122957 02-04  
HABITUATION TO LIGHT AND SPONTANEOUS ACTIVITY IN THE ISOLATED SIPHON OF APLYSIA: THE EFFECTS OF SYNAPTICALLY ACTIVE PHARMACOLOGICAL AGENTS. (PH.D.DISSERTATION). 123950 02-04  
SEROTONERGIC AND CHOLINERGIC INVOLVEMENT IN HABITUATION OF ACTIVITY AND SPONTANEOUS ALTERNATION OF RATS IN A Y-MAZE. 131131 02-03  
THE EFFECTS OF TRANLYCYPROMINE AND CHLORPROMAZINE UPON THE SPONTANEOUS MOTOR ACTIVITY OF MICE. 133624 02-04
- SQ-11290-14C**  
SPECIES DIFFERENCES IN THE METABOLISM OF A TRICYCLIC PSYCHOTROPIC AGENT, SQ-11290-14C. 133718 02-13
- SQUIRREL**  
EFFECTS OF PROPRANOLOL, PHENTOLAMINE AND METHYL ATROPINE ON CARDIOVASCULAR FUNCTION IN THE SQUIRREL MONKEY DURING BEHAVIORAL EXPERIMENTS. 122179 02-03  
THE EFFECTS OF A MARIJUANA EXTRACT ON TWO-CHOICE DISCRIMINATION LEARNING IN THE SQUIRREL MONKEY. 131445 02-04  
SCHEDULE-DEPENDENT EFFECTS IN AMPHETAMINE AND MORPHINE SELF-ADMINISTRATION BY SQUIRREL MONKEY. 131446 02-04  
PUNISHED AND UNPUNISHED OPERANT BEHAVIOR AFTER ATROPINE ADMINISTRATION TO THE VMH OF SQUIRREL MONKEYS. 132117 02-04
- ST-155**  
SUPPRESSION BY CLONIDINE (ST-155) OF CARDIAC ARRHYTHMIAS INDUCED BY DIGITALIS. 122181 02-03
- STABILITY**  
THE STABILITY AND SENSITIVITY OF MEASURES OF THOUGHT, PERCEPTION AND EMOTIONAL AROUSAL. 120118 02-08
- STAFF**  
CHANGES IN STAFF ANXIETY AND ATTITUDES DURING A DOUBLE-BLIND STUDY OF HALOPERIDOL IN ACUTE SCHIZOPHRENICS WITHIN A STRUCTURED MILIEU. 128349 02-08
- STATE**  
ROLE OF BRAIN AMINES IN LEARNING ASSOCIATED WITH AMPHETAMINE STATE. 122201 02-04  
EFFECT OF SEDUXEN ON THE FUNCTIONAL STATE OF THE ADRENAL CORTEX AND THYROID GLAND. 125265 02-04  
CHANGES IN OPERANT BEHAVIOR AS AN INDEX OF A WITHDRAWAL STATE FROM MORPHINE IN RATS. 127528 02-04  
COMPARATIVE STUDY OF TWO ANTIPSYCHOTIC DRUGS IN A STATE HOSPITAL. 130546 02-11  
THE CATALEPTIC STATE INDUCED BY KETAMINE: A REVIEW OF THE NEUROPHARMACOLOGY OF ANESTHESIA. 133743 02-03
- STATUS-EPILEPTICUS**  
TONIC STATUS-EPILEPTICUS PRECIPITATED BY INTRAVENOUS DIAZEPAM IN A CHILD WITH PETIT-MAL STATUS. 123629 02-13  
TONIC STATUS-EPILEPTICUS PRECIPITATED BY INTRAVENOUS BENZODIAZEPINE IN FIVE PATIENTS WITH LENNOX-GASTAUT SYNDROME. 123636 02-13
- STATUS-PSYCHOMOTRICUS**  
REPORT ON A CASE OF STATUS-PSYCHOMOTRICUS WITH TONIC TWILIGHT ATTACKS IN DRUG OVERDOSE. 133331 02-15
- STEADY-STATE**  
STEADY-STATE LEVELS OF PROBENECID AND THEIR RELATION TO ACID MONOAMINE METABOLITES IN HUMAN CEREBROSPINAL FLUID. 119985 02-03
- STEM**  
ANTAGONISM OF PENTYLENETETRAZOL EXCITATION BY ANTICONVULSANTS ON SINGLE BRAIN STEM NEURONS. 132676 02-03  
BRAIN STEM SEROTONIN DEPLETION AND PONTO-GENICULO-OCCIPITAL WAVE ACTIVITY IN THE CAT TREATED WITH RESERPINE. 132684 02-03
- STEMETIL**  
CEREBRAL DISTURBANCES IN PREGNANCY DUE TO ACUTE POISONING WITH STEMETIL. 133068 02-15
- STEP-DOWN**  
PREINJECTION TIME OF SCOPOLAMINE AND STEP-DOWN LATENCY IN MICE. 120097 02-04
- STEREOTYPED**  
THE INDUCTION AND ANTAGONISM OF CENTRAL NERVOUS SYSTEM STIMULANT - INDUCED STEREOTYPED BEHAVIOR IN THE CAT. 122569 02-04  
THE SUBSTANTIA-NIGRA AND STEREOTYPED BEHAVIOUR. 122575 02-03  
BETA-ADRENERGIC BLOCKING AGENTS AND AMPHETAMINE OR APOMORPHINE INDUCED STEREOTYPED BEHAVIOR IN RATS. 123937 02-04  
IMPLICATIONS OF AMPHETAMINE INDUCED STEREOTYPED BEHAVIOR AS A MODEL FOR TARDIVE DYSKINESIAS. 126230 02-13
- STEREOTYPIC**  
STEREOTYPIC AND ANTICATALEPTIC ACTIVITIES OF AMPHETAMINE AFTER INTRACEREBRAL INJECTIONS. 122573 02-03
- STEREOTYPY**  
THE DOSE-RESPONSE EFFECT OF AMPHETAMINE UPON AVOIDANCE BEHAVIOR IN THE RAT SEEN AS A FUNCTION OF INCREASING STEREOTYPY. 123935 02-04
- STERIC**  
STERIC REQUIREMENTS FOR CATECHOLAMINE UPTAKE BY RAT BRAIN SYNAPTOSOMES: STUDIES WITH RIGID ANALOGS OF AMPHETAMINE. 120357 02-03
- STIMULANT**  
THE EFFECT OF IMMUNOSYPHACTECTOMY ON THE RESPONSES OF THE MOUSE TO RESERPINE AND VARIOUS ANTIDEPRESSANT AND STIMULANT DRUGS. 120011 02-03



## Subject Index

- SYMPOSIUM: BEHAVIOR MODIFICATION BY DRUGS. III. THE CLINICAL USE OF STIMULANT DRUGS IN CHILDREN. 121988 02-14
- SYMPOSIUM: BEHAVIOR MODIFICATION BY DRUGS. II. PSYCHOLOGICAL EFFECTS OF STIMULANT DRUGS IN CHILDREN WITH MINIMAL BRAIN DYSFUNCTION. 121989 02-14
- SYNERGISM BY ATROPINE OF CENTRAL STIMULANT PROPERTIES OF PHENYLPROPANOLAMINE. 122399 02-03
- THE INDUCTION AND ANTAGONISM OF CENTRAL NERVOUS SYSTEM STIMULANT - INDUCED STEREOTYPED BEHAVIOR IN THE CAT. 122569 02-04
- STIMULANTS**
- EFFECT OF CENTRAL STIMULANTS AND DEPRESSANTS ON MOUSE BRAIN ACETYLCHOLINE AND CHOLINE LEVELS. 120232 02-03
- DRUG IDENTIFICATION, PROPERTIES AND CHARACTERISTICS: NARCOTICS, STIMULANTS, DEPRESSANTS, MARIJUANA AND HALLUCINOGENS. 122148 02-03
- AVOIDANCE ACQUISITION AND CNS STIMULANTS. 133196 02-04
- STIMULATING**
- EFFECT OF MELANOCYTE STIMULATING HORMONE ON THE CORTICAL SOMATIC EVOKED RESPONSES IN MAN. 121280 02-13
- STIMULATION**
- THE EFFECTS OF PROPRANOLOL AND ELECTRICAL STIMULATION ON THE CYCLIC 3,5 AMP CONTENT OF ISOLATED CEREBRAL TISSUE. 122357 02-03
- CLONIDINE INDUCED INTRAHYPOTHALAMIC STIMULATION OF EATING IN RATS. 122395 02-04
- INTERACTIONS OF ANGIOTENSIN, PHENOXYBENZAMINE AND PROPRANOLOL ON NORADRENALINE RELEASE DURING SYMPATHETIC NERVE STIMULATION. 122568 02-03
- EFFECT OF NONINHIBITION NARCOTICS ON STIMULATION TRANSMISSION IN THE CORTICOSPINAL SYSTEM. 125261 02-03
- EFFECT OF NEUROTROPIC AGENTS ON CHANGES IN BIOELECTRIC ACTIVITY OF THE RENAL NERVE, EVOKED BY STIMULATION OF THE DESCENDING COLUMNS OF THE SPINAL CORD. 125262 02-03
- CHANGES IN THE NEURONS OF CERTAIN SECTIONS OF THE RAT BRAIN DURING MOTOR STIMULATION INDUCED BY PHENAMINE. 133958 02-03
- STIMULATORY**
- EFFECT OF STIMULATORY DRUGS ON THE SOMATOSENSORY EVOKED POTENTIAL IN MAN. 133348 02-13
- STIMULI**
- CONDITIONED SUPPRESSION OF BAR-PRESSING BEHAVIOR BY STIMULI ASSOCIATED WITH DRUGS. 124223 02-04
- EFFECT OF MORPHINE DOSE SIZE ON THE CONDITIONED REINFORCING POTENCY OF STIMULI PAIRED WITH MORPHINE. 126906 02-04
- STIMULUS**
- STIMULUS CHARACTERISTICS OF MARIJUANA COMPONENTS. 120831 02-03
- DELTA9-TETRAHYDROCANNABINOL USED AS DISCRIMINATIVE STIMULUS FOR RATS IN POSITION LEARNING IN A T-SHAPED WATER MAZE. 133547 02-04
- STRAIN**
- THE PHARMACOKINETICS OF LITHIUM SALTS IN ACUTE STRAIN TESTS IN HEALTHY SUBJECTS. 133356 02-13
- STRAINS**
- HYPERTHERMIA IN D-AMPHETAMINE TOXICITY IN AGGREGATED MICE OF DIFFERENT STRAINS. 120364 02-03
- EFFECTS OF INTRAHIPPOCAMPAL INJECTIONS WITH METHYLSCOPOLAMINE AND NEOSTIGMINE UPON EXPLORATORY BEHAVIOUR IN TWO INBRED MOUSE STRAINS. 120789 02-04
- EFFECTS OF INTERTRIAL CROSSING PUNISHMENT AND D-AMPHETAMINE SULFATE ON AVOIDANCE AND ACTIVITY IN FOUR SELECTIVELY BRED RAT STRAINS. 131293 02-04
- STRATEGY**
- A STRATEGY FOR THE STUDY OF BEHAVIORAL MECHANISMS OF ANTIPSYCHOTIC DRUG ACTION IN SCHIZOPHRENIA. 120122 02-08

## Psychopharmacology Abstracts

- STRENGTH**
- STRENGTH OF THE NERVOUS SYSTEM AS A FUNCTION OF PERSONALITY TYPE AND LEVEL OF AROUSAL. 119068 02-14
- HABIT STRENGTH, DRIVE, AND DRUG EFFECTS: ROUND 2. 122953 02-04
- STRIATAL**
- MORPHINE CATALEPSY IN THE RAT: RELATION TO STRIATAL DOPAMINE METABOLISM. 119032 02-03
- STRIATONIGRAL**
- STRIATONIGRAL DEGENERATION RESPONSE TO LEVODOPA THERAPY. 122171 02-11
- STRIATUM**
- EFFECT OF GAMMA-HYDROXYBUTYRATE ON DOPAMINE AND DOPAMINE METABOLITES IN THE RAT STRIATUM. 121522 02-03
- TYROSINE HYDROXYLATION IN THE RAT STRIATUM IN VITRO AND IN VIVO AFTER NIGRAL LESION AND CHLORPROMAZINE TREATMENT. 132683 02-03
- EFFECT OF 5-HYDROXYDOPAMINE ON UPTAKE AND CONTENT OF SEROTONIN IN RAT STRIATUM. 133527 02-03
- STRUCTURAL**
- STRUCTURAL AND ULTRASTRUCTURAL CHANGES IN DEVELOPING SYMPATHETIC GANGLIA INDUCED BY GUANETHIDINE. 132645 02-03
- STRUCTURAL ANALYSIS OF TROPINES: STRUCTURE OF BENZOYL TROPINE AND BENZOYL-PSI-TROPINE (TROPACOCINE) AND THEIR CHOLINOLYTIC ACTIONS. 132802 02-01
- STRUCTURE**
- STRUCTURAL ANALYSIS OF TROPINES: STRUCTURE OF BENZOYL TROPINE AND BENZOYL-PSI-TROPINE (TROPACOCINE) AND THEIR CHOLINOLYTIC ACTIONS. 132802 02-01
- STRUCTURE-ACTIVITY**
- STRUCTURE-ACTIVITY RELATIONSHIP OF 5-TIAZOLOBENZODIAZEPINES IN CENTRAL NERVOUS DEPRESSANT ACTION. 130910 02-03
- STRUCTURED**
- CHANGES IN STAFF ANXIETY AND ATTITUDES DURING A DOUBLE-BLIND STUDY OF HALOPERIDOL IN ACUTE SCHIZOPHRENICS WITHIN A STRUCTURED MILIEU. 128349 02-08
- STRUCTURES**
- ACETYLCHOLINE LEVEL IN BRAIN STRUCTURES OF RATS FOLLOWING ADMINISTRATION OF LYSERGIC ACID DIETHYLAMIDE. 125256 02-03
- STRYCHNINE**
- EFFECTS OF Picrotoxin and Strychnine upon electrical activity of the proximal retina. 121968 02-03
- SU-21707**
- THE EFFECTS OF SU-21707 ON THE SLEEP ELECTROENCEPHALOGRAPH OF NORMAL SUBJECTS. 132954 02-13
- SUBCELLULAR**
- INHIBITORY EFFECTS OF CHRONIC ADMINISTRATION OF MORPHINE ON URIDINE AND THYMIDINE INCORPORATING ABILITIES OF MOUSE LIVER AND BRAIN SUBCELLULAR FRACTIONS. 122245 02-03
- OXIDATION AND GLUCURONIDATION OF CERTAIN DRUGS IN VARIOUS SUBCELLULAR FRACTIONS OF RAT LIVER: BINDING OF DESMETHYLIMIPRAMINE AND HEXOBARBITAL TO CYTOCHROME-P-450 AND OXIDATION AND GLUCURONIDATION OF DESMETHYLIMIPRAMINE, AMINOPYRINE, P-NITROPHENOL AND 1-NAPHTHOL. 124120 02-03
- METHAMPHETAMINE, FENFLURAMINE AND THEIR METABOLITES: IDENTIFICATION AND SUBCELLULAR LOCALIZATION IN RAT BRAIN HOMOGENATES. (UNPUBLISHED PAPER). 126248 02-01
- SUBCORTICAL**
- THE EFFECT OF L-DOPA ON CORTICAL AND SUBCORTICAL ELECTRICAL ACTIVITY IN NORMAL UNRESTRAINED RATS. 133294 02-03
- SUBJECTIVE**
- THE USE OF PYRACETAM IN SUBJECTIVE SYNDROMES CAUSED BY CRANIAL TRAUMA OBSERVED IN THE PSYCHIATRIC SERVICE OF A GENERAL HOSPITAL. 121855 02-11
- SUBJECTS**
- METABOLISM OF 3,4 DIHYDROXYPHENYLALANINE (L-DOPA) IN HUMAN SUBJECTS. 122166 02-13
- EFFECTS OF PLACIDYL ON SLEEP OF NORMAL SUBJECTS. 124143 02-14

- THE EFFECTS OF SU-21707 ON THE SLEEP ELECTROENCEPHALOGRAPH OF NORMAL SUBJECTS. 132954 02-13
- FLURAZEPAM: STUDY OF ITS HYPNOTIC PROPERTIES IN NORMAL SUBJECTS. 133221 02-07
- THE PHARMACOKINETICS OF LITHIUM SALTS IN ACUTE STRAIN TESTS IN HEALTHY SUBJECTS. 133356 02-13
- SUBMITOCHONDRIAL**  
ALLEVIATION OF BARBITURATE INHIBITION ON THE OXIDATIVE ACTIVITY OF SUBMITOCHONDRIAL PARTICLES BY ALKALI. 122230 02-03
- SUBSTANTIA-NIGRA**  
ON THE INVOLVEMENT OF THE CAUDATE-PUTAMEN, GLOBUS-PALLIDUS AND SUBSTANTIA-NIGRA WITH NEUROLEPTIC AND CHOLINERGIC MODIFICATION OF LOCOMOTOR ACTIVITY. 121274 02-03
- THE SUBSTANTIA-NIGRA AND STEREOTYPED BEHAVIOUR. 122575 02-03
- SUBSTITUTED**  
SUBSTITUTED 3,4,5 TRIMETHOXYBENZAMIDES: CORRELATION BETWEEN INHIBITION OF PYRUVIC ACID OXIDATION AND ANTICONVULSANT ACTIVITY. 133745 02-03
- SUBSTITUTION**  
PHOTOXICITY AND PHOTONUCLEOPHILIC AROMATIC SUBSTITUTION IN CHLORPROMAZINE. 122246 02-01
- SUBSTRATE**  
SUBSTRATE SELECTIVE AND TISSUE SELECTIVE INHIBITION OF MONOAMINE OXIDASE. 133212 02-03
- SUBTHALAMIC**  
PALLIDAL AND TEGMENTAL INHIBITION OF OSCILLATORY SLOW WAVES AND UNIT ACTIVITY IN THE SUBTHALAMIC NUCLEUS. 122204 02-03
- SUCCINATE**  
ACTIVATION OF BRAIN SUCCINATE DEHYDROGENASE BY LITHIUM. 123663 02-03
- SUFFERING**  
THE USE OF A FIXED DOSAGE COMBINATION OF AMITRIPTYLINE AND CHLORDIAZEPOXIDE IN THE TREATMENT OF PATIENTS SUFFERING FROM ANXIETY AND DEPRESSION. 132754 02-09
- SUFFUSED**  
INHALATION INDUCED TOLERANCE AND PHYSICAL DEPENDENCE: THE HAZARD OF OPIATE SUFFUSED MARIJUANA. 127693 02-03
- SUICIDAL**  
SUICIDAL AND ACCIDENTAL DIGOXIN INGESTION. 121817 02-15
- SUICIDE**  
SUICIDE ON L-DOPA. 124139 02-15
- SULFATE**  
EFFECTS OF INTERTRIAL CROSSING PUNISHMENT AND D-AMPHETAMINE SULFATE ON AVOIDANCE AND ACTIVITY IN FOUR SELECTIVELY BRED RAT STRAINS. 131293 02-04
- RELATIVE DEGREE OF TOLERANCE TO MORPHINE SULFATE AND METHADONE HYDROCHLORIDE IN THE RAT AND THE INTERACTION OF DEXAMETHASONE. 133293 02-04
- SULFATES**  
CHEMICAL SYNTHESIS AND ANALGESIC EFFECT OF MORPHINE ETHEREAL SULFATES. 119052 02-03
- SULPHATE**  
EFFECTS OF ATROPINE SULPHATE ON REPEATED EXTINCTION PERFORMANCE IN HIPPOCAMPECTOMIZED RATS. 123936 02-04
- SUPERSENSITIVITY**  
THE ROLE OF METABOLISM IN TEMPERATURE DEPENDENT SUPERSENSITIVITY OF GUINEA-PIG ATRIA TO SYMPATHOMIMETIC AMINES. 120235 02-03
- SUPPRESSION**  
SCOPOLAMINE: EFFECTS ON CONDITIONED SUPPRESSION. 121277 02-04
- INCREASED HEPATIC PHOSPHOPROTEIN PHOSPHATASE ACTIVITY INDUCED BY PHENOBARBITAL AND ITS SUPPRESSION BY CYCLOHEXIMIDE AND SKF-525-A. 121647 02-05
- SUPPRESSION BY CLONIDINE (ST-155) OF CARDIAC ARRHYTHMIAS INDUCED BY DIGITALIS. 122181 02-03
- SUPPRESSION OF LYSERGIC ACID DIETHYLAMIDE (LSD) EFFECTS IN PREGNANT RATS. 124174 02-03
- CONDITIONED SUPPRESSION OF BAR-PRESSING BEHAVIOR BY STIMULI ASSOCIATED WITH DRUGS. 124223 02-04
- ALTERATIONS BY CENTRALLY ACTING DRUGS OF THE SUPPRESSION OF SELF-STIMULATION BEHAVIOR IN THE RAT BY TETRABENAZINE, PHYSOSTIGMINE, CHLORPROMAZINE AND PENTOBARBITAL. 133473 02-04
- SURFACE**  
THE EFFECTS OF PROCAINE, AMYLOBARBITONE ON DRUG-INDUCED CHANGES IN THE SURFACE POTENTIALS OF AN ISOLATED SYMPATHETIC GANGLION. 121302 02-03
- SURGERY**  
INAPPROPRIATE RESPONSE OF DRUG ADDICTS TO CARDIOTHORACIC SURGERY. 119039 02-15
- SUSTAINED**  
THE EFFECT OF METHYLPHENIDATE (RITALIN) ON SUSTAINED ATTENTION IN HYPERACTIVE CHILDREN. 122198 02-11
- SWIMMING**  
ENHANCEMENT OF SWIMMING PERFORMANCE WITH DELTA9-TETRAHYDROCANNABINOL. 131283 02-04
- SWITCH**  
THE SWITCH PROCESS IN MANIC-DEPRESSIVE ILLNESS. II. RELATIONSHIP TO CATECHOLAMINES, REM SLEEP, AND DRUGS. 122980 02-09
- SYMMETREL**  
TREATMENT OF PARKINSONS DISEASE WITH AMANTADINE (SYMMETREL). 130020 02-11
- SYMPATHETIC**  
PRELIMINARY NOTE: CHANGES IN RNA CONTENT OF SYMPATHETIC GANGLION CELLS OF RESERPINE PRETREATED RATS. 121283 02-03
- THE EFFECTS OF PROCAINE, AMYLOBARBITONE ON DRUG-INDUCED CHANGES IN THE SURFACE POTENTIALS OF AN ISOLATED SYMPATHETIC GANGLION. 121302 02-03
- THE INFLUENCE OF SOME CENTRALLY ACTING DRUGS ON SYMPATHETIC NERVE ACTIVITY. 121308 02-03
- INTERACTIONS OF ANGIOTENSIN, PHENOXYBENZAMINE AND PROPRANOLOL ON NORADRENALINE RELEASE DURING SYMPATHETIC NERVE STIMULATION. 122568 02-03
- ENHANCED RELEASE OF DOPAMINE-BETA-HYDROXYLASE AND NOREPINEPHRINE FROM SYMPATHETIC NERVES BY DIBUTYRYL CYCLIC-AMP AND THEOPHYLLINE. (UNPUBLISHED PAPER). 132369 02-03
- STRUCTURAL AND ULTRASTRUCTURAL CHANGES IN DEVELOPING SYMPATHETIC GANGLIA INDUCED BY GUANETHIDINE. 132645 02-03
- LACK OF TOXIC EFFECT OF GUANETHIDINE ON NERVE CELLS AND SMALL INTENSELY FLUORESCENT CELLS IN CULTURES OF SYMPATHETIC GANGLIA OF NEWBORN RATS. 132656 02-03
- SYMPATHOMIMETIC**  
THE ROLE OF METABOLISM IN TEMPERATURE DEPENDENT SUPERSENSITIVITY OF GUINEA-PIG ATRIA TO SYMPATHOMIMETIC AMINES. 120235 02-03
- INTERACTIONS OF GUANETHIDINE AND INDIRECT ACTING SYMPATHOMIMETIC AMINES. 133130 02-03
- SYMPOSIUM**  
SYMPOSIUM: BEHAVIOR MODIFICATION BY DRUGS. III. THE CLINICAL USE OF STIMULANT DRUGS IN CHILDREN. 121988 02-14
- SYMPOSIUM: BEHAVIOR MODIFICATION BY DRUGS. II. PSYCHOLOGICAL EFFECTS OF STIMULANT DRUGS IN CHILDREN WITH MINIMAL BRAIN DYSFUNCTION. 121989 02-14
- SYMPOSIUM: BEHAVIOR MODIFICATION BY DRUGS. I. PHARMACOLOGY OF THE AMPHETAMINES. 121990 02-13
- SYMPTOM**  
NEUROPSYCHOLOGICAL TEST PERFORMANCE BEFORE AND AFTER SYMPTOM REMOVAL IN A CHILD WITH GILLES-DE-LA-TOURETTE SYNDROME. 125802 02-14

## Subject Index

### SYMPTOMS

- CONTROL OF BEHAVIORAL SYMPTOMS IN PATIENTS WITH LONG-TERM ILLNESS. 120730 02-14
- TYPES OF ORAL CONTRACEPTIVES, DEPRESSION, AND PREMENSTRUAL SYMPTOMS. 125961 02-14
- TARGET SYMPTOMS IN LITHIUM CARBONATE THERAPY. 127854 02-08
- LEVOAMPHETAMINE AND DEXTROAMPHETAMINE: COMPARATIVE EFFICACY IN THE HYPERKINETIC SYNDROME: ASSESSMENT BY TARGET SYMPTOMS. 129834 02-14
- A DOUBLE-BLIND COMPARISON OF THE EFFICACY OF EX-10-029 AND TRIHEXYPHENIDYL HYDROCHLORIDE IN RELIEVING DRUG-INDUCED PARKINSONIAN SYMPTOMS. 132956 02-07

### SYNACTHEN

- THE SYNACTHEN TEST IN DEPRESSIVE ILLNESS. 132870 02-13

### SYNAPTIC

- THE EFFECTS OF ANESTHETICS ON SYNAPTIC EXCITATION AND INHIBITION IN THE OLFACTORY BULB. (UNPUBLISHED PAPER). 132508 02-03

### SYNAPTICALLY

- HABITUATION TO LIGHT AND SPONTANEOUS ACTIVITY IN THE ISOLATED SIPHON OF APLYSIA: THE EFFECTS OF SYNAPTICALLY ACTIVE PHARMACOLOGICAL AGENTS. (PH.D. DISSERTATION). 123950 02-04

### SYNAPTOSOMES

- SEROTONIN SYNTHESIS WITH RAT BRAIN SYNAPTOSOMES: EFFECTS OF SEROTONIN AND MONOAMINE OXIDASE INHIBITORS. 119055 02-03
- STERIC REQUIREMENTS FOR CATECHOLAMINE UPTAKE BY RAT BRAIN SYNAPTOSOMES: STUDIES WITH RIGID ANALOGS OF AMPHETAMINE. 120357 02-03
- SYNAPTOSOMES FROM FOREBRAIN OF RATS WITH MIDBRAIN RAPHE LESIONS: SELECTIVE REDUCTION OF SEROTONIN UPTAKE. 124188 02-03

### SYNDROME

- DRUG USAGE IN THE IRRITABLE COLON SYNDROME. 121779 02-17
- AMOTIVATIONAL SYNDROME: THE REAL MANAGEMENT PROBLEM OF SCHIZOPHRENIA. 121902 02-08
- PHOBIC ANXIETY SYNDROME COMPLICATED BY DRUG DEPENDENCE AND ADDICTION. 122663 02-10
- TONIC STATUS-EPILEPTICUS PRECIPITATED BY INTRAVENOUS BENZODIAZEPINE IN FIVE PATIENTS WITH LENNOX-GASTAUT SYNDROME. 123636 02-13
- NEUROPSYCHOLOGICAL TEST PERFORMANCE BEFORE AND AFTER SYMPTOM REMOVAL IN A CHILD WITH GILLES-DE-LA-TOURETTE SYNDROME. 125802 02-14
- ACUTE BRAIN SYNDROME ASSOCIATED WITH LITHIUM THERAPY. 129509 02-15
- LEVOAMPHETAMINE AND DEXTROAMPHETAMINE: COMPARATIVE EFFICACY IN THE HYPERKINETIC SYNDROME: ASSESSMENT BY TARGET SYMPTOMS. 129834 02-14
- ABERRANT RESPONSE TO DIAZEPAM: A NEW SYNDROME. 129967 02-15
- TREATMENT OF TOURETTES SYNDROME: WITH HALOPERIDOL, REVIEW OF 34 CASES. 131960 02-09
- COMPARISON OF CARISOPRODOL, BUTABARBITAL, AND PLACEBO IN TREATMENT OF THE LOW BACK SYNDROME. 132713 02-11
- PASPERTIN (METOCLOPRAMIDE) AS A CAUSE OF DYSTONIC HYPERKINETIC SYNDROME IN CHILDREN. 132901 02-15
- USE OF HYDROCHLORHYDRATE OF AMANTADINE IN PARKINSONS SYNDROME. 132986 02-11
- NOTES ON A CASE OF TICS (GILLES-DE-LA-TOURETTE SYNDROME) TREATED BY HALOPERIDOL. 133011 02-14
- TREMOR INHIBITION IN PARKINSON SYNDROME AFTER APOMORPHINE ADMINISTRATION UNDER L-DOPA AND DECARBOXYLASE INHIBITOR BASIC THERAPY. 133262 02-11
- NEW DYSTONIC SYNDROME ASSOCIATED WITH BUTYROPHENONE THERAPY. 133516 02-15

## Psychopharmacology Abstracts

- THE ADVANTAGES OF THE COMBINATION TREATMENT (L-DOPA AND DECARBOXYLASE INHIBITOR) IN THE PARKINSON SYNDROME. 133518 02-11

### SYNDROMES

- THE USE OF PYRACETAM IN SUBJECTIVE SYNDROMES CAUSED BY CRANIAL TRAUMA OBSERVED IN THE PSYCHIATRIC SERVICE OF A GENERAL HOSPITAL. 121855 02-11
- N-PHENYL-N-BENZYL-4-AMINO-1-METHYLPYPERIDIN HCL (BAMIPINE) COMBINED WITH 1-CYCLOHEXYL-1-METHYL 2 METHYLAMINOETHANE (CHP) FOR THE INTERIM AND TERMINAL TREATMENT OF DEPRESSIVE SYNDROMES. 122296 02-07
- ELENIUM-POLFA IN TREATMENT OF ALCOHOL WITHDRAWAL SYNDROMES. 133137 02-11
- CEREBRAL AND PERIPHERAL UTILIZATION OF L-DOPA IN PATIENTS WITH PARKINSONISM, DEPRESSIVE OR MANIC SYNDROMES UNDER L-DOPA PERFUSION WITH OR WITHOUT A DECARBOXYLASE INHIBITOR. 133175 02-13

### SYNERGISM

- SYNERGISM BY ATROPINE OF CENTRAL STIMULANT PROPERTIES OF PHENYLPROPANOLAMINE. 122399 02-03

### SYNERGY

- SYNERGY OF ETHANOL AND PUTATIVE NEUROTRANSMITTERS: GLYCINE AND SERINE. 134043 02-03

### SYNTHESIS

- EFFECTS OF CATECHOLAMINE SYNTHESIS INHIBITION ON ETHANOL NARCOSIS IN MICE. 118988 02-03
- CHEMICAL SYNTHESIS AND ANALGESIC EFFECT OF MORPHINE ETHERAL SULFATES. 119052 02-03
- SEROTONIN SYNTHESIS WITH RAT BRAIN SYNAPTOSOMES: EFFECTS OF SEROTONIN AND MONOAMINE OXIDASE INHIBITORS. 119055 02-03
- EFFECTS OF PHENOTHIAZINES ON AMINO ACID TRANSPORT AND PROTEIN SYNTHESIS IN ISOLATED NERVE ENDINGS. 119056 02-03
- INSOMNIA AND CEREBRAL METABOLISM OF SEROTONIN IN CAT: IN VITRO SYNTHESIS AND RELEASE OF SEROTONIN 18 H AFTER DESTRUCTION OF THE RAPHE NUCLEI. 119684 02-03
- ALTERED NOREPINEPHRINE METABOLISM FOLLOWING EXPERIMENTAL SPINAL CORD INJURY. PART 2: PROTECTION AGAINST TRAUMATIC SPINAL CORD HEMORRHAGIC NECROSIS BY NOREPINEPHRINE SYNTHESIS BLOCKADE WITH ALPHA-METHYL-TYROSINE. 121067 02-03
- DOPAMINE-BETA-HYDROXYLASE: REGULATION OF ITS SYNTHESIS AND RELEASE FROM NERVE TERMINALS. 122221 02-03
- LOCAL SYNTHESIS AND BREAKDOWN OF NORADRENALINE IN CONSTRICTED RAT SCIATIC NERVES. 122574 02-03
- SYNTHESIS OF 7,8 DIHYDROXYCHLORPROMAZINE AND ANALOGS. 123841 02-01
- 14C-CATECHOLAMINE SYNTHESIS IN MOUSE BRAIN DURING MORPHINE WITHDRAWAL. 127206 02-05
- EFFECT OF ACTH ON THE SYNTHESIS OF RAPIDLY LABELLED RNA IN THE NERVOUS SYSTEM OF MICE. 132695 02-03

### SYNTHETIC

- COMPARISON OF BEHAVIORAL EFFECTS OF SYNTHETIC (-)-DELTA9-TRANS-TETRAHYDROCANNABINOL AND MARIJUANA EXTRACT DISTILLATE IN CHIMPANZEES. 122398 02-04
- STUDIES ON BENZODIAZEPINES II: THE NEW SYNTHETIC METHODS OF 1,4 BENZODIAZEPINES. 130913 02-01

### SYRUP

- SYRUP METHADONE CONSUMPTION BY RATS. 129619 02-04

### SYSTEMATIC

- NICOTINIC ACID, THIORIDAZINE, FLUOXIMESTERONE AND THEIR COMBINATIONS IN HOSPITALIZED GERIATRIC PATIENTS: A SYSTEMATIC CLINICAL STUDY. 130668 02-11

### SYSTEMIC

- EFFECTS OF SYSTEMIC ADMINISTRATION OF PROPRANOLOL ON THE TIMING BEHAVIOR (DRL-20) OF RATS. 132761 02-04

### SYSTEMS

- NARCOTIC DRUGS: EFFECTS ON THE SEROTONIN BIOSYNTHETIC SYSTEMS OF THE BRAIN. 121320 02-03

- T-SHAPED**  
 DELTA9-TETRAHYDROCANNABINOL USED AS DISCRIMINATIVE STIMULUS FOR RATS IN POSITION LEARNING IN A T-SHAPED WATER MAZE. 133547 02-04
- TABLETS**  
 COMPARISON OF PERPHENAZINE (TRILAFON TABLETS) WITH PERPHENAZINE ENANTHATE (TRILAFON DEPOT INJECTION) IN A DOUBLE-BLIND TRIAL. 133351 02-08
- TACHYCARDIA**  
 THE TREATMENT OF PHENOTHIAZINE INDUCED TACHYCARDIA BY PROPRANOLOL. 128463 02-13
- TARDIVE**  
 THE PREVALENCE OF TARDIVE DYSKINESIAS IN MENTAL HOSPITAL PATIENTS. 120729 02-15  
 RESERPINE FOR TARDIVE DYSKINESIA. 120855 02-13  
 TREATMENT OF TARDIVE DYSKINESIA: II. SHORT-TERM EFFICACY OF DOPAMINE BLOCKING AGENTS HALOPERIDOL AND THIOPROPAZATE. 122704 02-11  
 THERAPEUTIC APPROACHES TO TARDIVE DYSKINESIA: A REVIEW OF THE LITERATURE. 126229 02-14  
 IMPLICATIONS OF AMPHETAMINE INDUCED STEREOTYPED BEHAVIOR AS A MODEL FOR TARDIVE DYSKINESIAS. 126230 02-13  
 PREVENTION AND MANAGEMENT OF TARDIVE DYSKINESIA. 127389 02-11  
 TREATMENT OF TARDIVE DYSKINESIA: III. CLINICAL EFFICACY OF A DOPAMINE COMPETING AGENT, METHYLDOPA. 129833 02-13  
 THE PHARMACOLOGY OF TARDIVE DYSKINESIAS. 134120 02-15
- TARGET**  
 TARGET SYMPTOMS IN LITHIUM CARBONATE THERAPY. 127854 02-08  
 LEVOAMPHETAMINE AND DEXTROAMPHETAMINE: COMPARATIVE EFFICACY IN THE HYPERKINETIC SYNDROME: ASSESSMENT BY TARGET SYMPTOMS. 129834 02-14
- TASKS**  
 TOLERANCE TO DELTA9-THC UNDER DELAYED MATCHING-TO-SAMPLE TASKS IN CHIMPANZEES: EFFECTS OF DELAY LENGTH. 131450 02-04
- TASTE**  
 RETROGRADE AMNESIA FOR DISCRIMINATED TASTE AVERSIONS: A MEMORY DEFICIT. 120556 02-04  
 EFFECTS OF CHLORDIAZEPoxide AND ETHANOL ON THE EXTINCTION OF A CONDITIONED TASTE AVERSION. 130364 02-04
- TECHNIQUES**  
 MULTIPLE REGRESSION TECHNIQUES IN PREDICTING PATIENT RESPONSE TO PSYCHOPHARMACOLOGIC DRUGS. 133644 02-16
- TECTUM**  
 EFFECTS OF PENTOBARBITAL ON THE VISUAL EVOKED RESPONSE IN THE AVIAN OPTIC TECTUM. 122012 02-03
- TEGMENTAL**  
 PALLIDAL AND TEGMENTAL INHIBITION OF OSCILLATORY SLOW WAVES AND UNIT ACTIVITY IN THE SUBTHALAMIC NUCLEUS. 122204 02-03
- TEMPERATURE**  
 A PIMOZIDE SENSITIVE EFFECT OF APOMORPHINE ON BODY TEMPERATURE OF THE RABBIT. 119050 02-03  
 THE ROLE OF METABOLISM IN TEMPERATURE DEPENDENT SUPERSENSITIVITY OF GUINEA-PIG ATRIA TO SYMPATHOMIMETIC AMINES. 120235 02-03  
 CENTRAL ACTIONS OF 6-HYDROXYDOPAMINE AND OTHER PHENYLETHYLAMINE DERIVATIVES ON BODY TEMPERATURE IN THE RAT. 120362 02-03  
 EFFECT OF INTRACEREBRAL INJECTIONS OF CARBAMYLCHOLINE AND ACETYLCHOLINE ON TEMPERATURE REGULATION IN THE CAT. 120811 02-03  
 BEHAVIORAL CONTROL OF DRUG METABOLISM AND BODY TEMPERATURE: BIOCHEMICAL AND PHYSIOLOGICAL CORRELATES. (PH.D. DISSERTATION). 130761 02-03  
 TEMPERATURE INCREASES AND BLOOD PROTEIN CHANGES WITH NEUROLEPTICS: WITH SPECIAL CONSIDERATION OF THE NEW DIBENZODIAZEPINE DERIVATIVE, CLOZAPINE. 133350 02-15
- TEMPORAL**  
 DISRUPTION OF A TEMPORAL DISCRIMINATION BY THE MINOR TRANQUILIZER, OXAZEPAM. 119982 02-04  
 DELTA9-TETRAHYDROCANNABINOL: TEMPORAL CORRELATION OF THE PSYCHOLOGIC EFFECTS AND BLOOD LEVELS AFTER VARIOUS ROUTES OF ADMINISTRATION. 131610 02-14
- TEMPORARY**  
 TEMPORARY ALTERATION OF CEREBROVASCULAR PERMEABILITY TO PLASMA PROTEIN DURING DRUG-INDUCED SEIZURES. 122177 02-03
- TERATOGENIC**  
 STUDY OF THE TERATOGENIC POTENTIAL OF DIAZEPAM AND SCH-12041. 121579 02-05
- TERATOGENICITY**  
 LSD TERATOGENICITY AND CYTOGENETICS. 121212 02-15
- TERMINAL**  
 THE EFFECT OF THE GABA ANTAGONISTS BICUCULLINE AND Picrotoxin ON PRIMARY AFFERENT TERMINAL EXCITABILITY. 121964 02-03  
 N-PHENYL-N-BENZYL-4-AMINO-1-METHYLPIPERIDIN HCL (BAMIPINE) COMBINED WITH 1-CYCLOHEXYL-1-METHYL 2 METHYLAMINOETHANE (CHP) FOR THE INTERIM AND TERMINAL TREATMENT OF DEPRESSIVE SYNDROMES. 122296 02-07
- TERMINALS**  
 CHEMICALLY INDUCED DEGENERATION OF INDOLEAMINE-CONTAINING NERVE TERMINALS IN RAT BRAIN. 120813 02-03  
 DOPAMINE-BETA-HYDROXYLASE: REGULATION OF ITS SYNTHESIS AND RELEASE FROM NERVE TERMINALS. 122221 02-03  
 PROTECTION BY DESIPRAMINE OF 6-HYDROXYDOPAMINE INDUCED DAMAGE TO ADRENERGIC NERVE TERMINALS IN MOUSE HEART. 122229 02-03
- TERRITORY**  
 THE EFFECT OF TRANQUILIZATION UPON TERRITORY MAINTENANCE IN THE MALE RED-WINGED BLACKBIRD (AGELAIUS-PHOENICEUS). 129868 02-04
- TEST**  
 THE USE OF A SIMPLE TEST OF ATTENTION AS A MEASURE OF DRUG EFFECTS IN SCHIZOPHRENIC PATIENTS. 120085 02-08  
 NEUROPSYCHOLOGICAL TEST PERFORMANCE BEFORE AND AFTER SYMPTOM REMOVAL IN A CHILD WITH GILLES-DE-LA-Tourette SYNDROME. 125802 02-14  
 THE EFFECT OF SCOPOLAMINE ON THE KAMIN EFFECT: A TEST OF THE PARASYMPATHETIC OVERREACTION HYPOTHESIS. 127023 02-04  
 ON THE ADMINISTRATION OF PSYCHOTROPIC DRUGS AND ITS SIDE-EFFECTS DETECTED BY LIVER FUNCTION TEST. 128952 02-08  
 THE SYNACTHEN TEST IN DEPRESSIVE ILLNESS. 132870 02-13  
 EXCRETION OF VANILLYL-MANDELIC ACID, HOMOVANILLIC ACID, N-METHYL-NICOTINAMIDE, AND N-METHYL-2-PYRIDONE-5-CARBOXAMIDE IN URINE OF VOLUNTARY TEST PERSONS AND PSYCHIATRIC PATIENTS BEFORE AND AFTER ADMINISTRATION OF METHIONINE. 133265 02-13
- TESTING**  
 CLINICAL TESTING OF A RETARD NEUROLEPTIC: FLUPHENAZINE ENANTHATE (MODITEN-RETARD, SQUIBB LAB.). 122306 02-07  
 TESTING SOME IMPLICATIONS OF THE SENSORY PHYSIOLOGICAL MODEL OF THE TIME SENSE. 130354 02-14  
 OPIRAN, ANXIETY AND PSYCHOSIS: CLINICAL TESTING OF A NEW INCISIVE NEUROLEPTIC. 132766 02-07  
 MORBID JEALOUSY: CLINICAL TESTING OF TREATMENT WITH PROPERICIAZINE. 133172 02-11
- TESTOSTERONE**  
 THE INFLUENCE OF ADRENALECTOMY, HYPOPHYSECTOMY, THYROIDECTOMY, CASTRATION, AND TESTOSTERONE ON APOMORPHINE INDUCED AGGRESSIVE BEHAVIOUR IN THE RAT. 120790 02-04
- TESTS**  
 PERFORMANCE TESTS IN A STUDY OF PHENOTHIAZINES IN SCHIZOPHRENIA: CAVEATS AND CONCLUSIONS. 120084 02-08  
 TRYPTOPHAN TRIALS IN TESTS FOR EVALUATION OF ANTIDEPRESSANTS. 125257 02-04



# Subject Index

- THE EFFECTS OF SCOPOLAMINE ON THE DELAYED RECALL OF NUMBERS TESTS. 126745 02-14
- THE PHARMACOKINETICS OF LITHIUM SALTS IN ACUTE STRAIN TESTS IN HEALTHY SUBJECTS. 133356 02-13
- TETRABENAZINE**  
ALTERATIONS BY CENTRALLY ACTING DRUGS OF THE SUPPRESSION OF SELF-STIMULATION BEHAVIOR IN THE RAT BY TETRABENAZINE, PHYSGOSTIGMINE, CHLORPROMAZINE AND PENTOBARBITAL. 133473 02-04
- TETRACHLORIDE**  
RELATION BETWEEN DRUG METABOLIZING ACTIVITY AND PHOSPHOLIPIDS IN HEPATIC MICROSOMES. I. EFFECTS OF PHENOBARBITAL, CARBON TETRACHLORIDE, AND ACTINOMYCIN-D. 119001 02-03
- TETRACYCLIC**  
CLINICAL AND EEG EFFECTS OF GB-94, A TETRACYCLIC ANTIDEPRESSANT (EEG MODEL IN DISCOVERY OF A NEW PSYCHOTROPIC DRUG). 132894 02-07
- TETRAHYDRO-BETA-CARBOLINE**  
6-METHOXY 1,2,3,4 TETRAHYDRO-BETA-CARBOLINE - A SEROTONIN ELEVATOR. 124272 02-03
- TETRAZOLIUM**  
INTRACELLULAR LOCALIZATION AND CO-FACTOR REQUIREMENT OF AMPHETAMINE TETRAZOLIUM REDUCTASE OF GUINEA-PIG BRAIN. 133763 02-03
- THC**  
INCREASED AND DECREASED EATING FOLLOWING THC ADMINISTRATION. 125538 02-04
- THEOPHYLLINE**  
ENHANCED RELEASE OF DOPAMINE-BETA-HYDROXYLASE AND NOREPINEPHRINE FROM SYMPATHETIC NERVES BY DIBUTYRYL CYCLIC-AMP AND THEOPHYLLINE. (UNPUBLISHED PAPER). 132369 02-03
- THEORETICAL**  
PROPHYLACTIC TREATMENT OF MANIC-DEPRESSIVE PSYCHOSIS BY LITHIUM CARBONATE: THEORETICAL AND PRACTICAL CONCERN OF VARIATIONS IN PLASMA CONCENTRATION. 122316 02-13
- THERAPEUTIC**  
SPASMODIC TORTICOLLIS AND L-DOPA: RESULTS OF THERAPEUTIC TRIAL IN SIX PATIENTS. 119029 02-13
- HALOPERIDOL, CLOPENTHIXOL, AND CHLORPROMAZINE IN CHRONIC SCHIZOPHRENIA: CHEMICALLY UNRELATED ANTIPSYCHOTICS AS THERAPEUTIC ALTERNATIVES. 122209 02-08
- THERAPEUTIC APPROACHES TO TARDIVE DYSKINESIA: A REVIEW OF THE LITERATURE. 126229 02-14
- MARIHUANA: ACUTE, CUMULATIVE, AND THERAPEUTIC EFFECTS. (UNPUBLISHED PAPER). 127418 02-13
- THERAPY**  
LITHIUM THERAPY FOR MANIC-DEPRESSIVES IN A LARGE, POOR, SPARSELY POPULATED CATCHMENT AREA. 119045 02-09
- ANTIDEPRESSANT DRUG THERAPY: ADDICTS VERSUS NONADDICTS. 119758 02-14
- WHAT EVERY DOCTOR SHOULD KNOW ABOUT DRUG THERAPY FOR PSYCHOTICS. 120796 02-08
- CONTRIBUTION TO LONG-TERM THERAPY FOR SCHIZOPHRENIC PSYCHOSES WITH RETARD NEUROLEPTICS. 121602 02-08
- SOME QUANTITATIVE BEHAVIORAL CHANGES IN L-DOPA THERAPY. 121884 02-14
- CLINICAL OBSERVATIONS IN ANAFRANIL THERAPY. 121900 02-09
- SEVERE HYPOTHYROIDISM - AN EARLY COMPLICATION OF LITHIUM THERAPY. 121979 02-15
- DRUG INTERACTIONS AND DIURETIC THERAPY. 122049 02-15
- PERSPECTIVES OF PARKINSONIAN THERAPY WITH L-DOPA. 122083 02-11
- STRIATONIGRAL DEGENERATION RESPONSE TO LEVODOPA THERAPY. 122171 02-11
- LITHIUM SALTS IN PSYCHIATRIC THERAPY: CONCERNING THE CURATIVE AND PREVENTIVE TREATMENT. 122315 02-09
- THE EFFECTS OF ELECTROSHOCK THERAPY, LITHIUM AND TRICYCLIC ANTIDEPRESSANT TREATMENT ON PROBENECID INDUCED ACCUMULATIONS OF CSF AMINE METABOLITES IN DEPRESSED PATIENTS. (UNPUBLISHED PAPER). 125200 02-09

# Psychopharmacology Abstracts

- A PRELIMINARY STUDY OF SELECTED EMOTIONAL CHANGES IN PARKINSONIANS ON L-DOPA THERAPY. 125809 02-14
- DECISIONS ABOUT DRUG THERAPY II: EXPERT OPINION IN A HYPOTHETICAL SITUATION. 126990 02-17
- RESULTS OF POSEDRIE THERAPY WITH NEUROSES AND PSYCHOPATHIES. 126998 02-10
- DRUG THERAPY OF CLINICAL DEPRESSIONS - CURRENT STATUS AND IMPLICATIONS FOR RESEARCH ON NEUROPHARMACOLOGY OF THE AFFECTIVE DISORDERS. 127220 02-09
- TARGET SYMPTOMS IN LITHIUM CARBONATE THERAPY. 127854 02-08
- DRUG THERAPY: SEDATIVES AND TRANQUILIZERS. 129465 02-10
- ACUTE BRAIN SYNDROME ASSOCIATED WITH LITHIUM THERAPY. 129509 02-15
- MANIA AS A MESSAGE: TREATMENT WITH FAMILY THERAPY AND LITHIUM CARBONATE. 130388 02-09
- PSYCHIATRIC AND BIOCHEMICAL PROFILES OF LITHIUM THERAPY IN MANIA. (CASE REPORT). 130547 02-09
- DECISIONS ABOUT DRUG THERAPY: III. SELECTION OF TREATMENT FOR PSYCHIATRIC INPATIENTS. 131961 02-14
- LOW DOSAGE PHENOTHIAZINE THERAPY: EFFECTIVE ANXIOLYTIC ACTION WITHOUT IMPAIRMENT TO INTELLECTUAL FUNCTION. 132715 02-10
- SOMATOSENSORY EVOKED POTENTIAL: AN OBJECTIVE INDICATOR OF THE THERAPY EFFICACY OF A NEW PSYCHOTROPIC DRUG, CLORAZEPATE DIPOTASSIUM (TRANXENE). 132953 02-07
- FOLLOWUP RESULTS OVER AN INTERVAL OF 9 YEARS WITH CARBAMAZEPINE THERAPY IN EPILEPSY. 133207 02-11
- TREMOR INHIBITION IN PARKINSON SYNDROME AFTER APOMORPHINE ADMINISTRATION UNDER L-DOPA AND DECARBOXYLASE INHIBITOR BASIC THERAPY. 133262 02-11
- INTERACTION BETWEEN NEUROLEPTIC THERAPY AND SOCIO-THERAPEUTIC APPROACH: AN INVESTIGATION WITH PENFLURIDOL AND HALOPERIDOL. 133355 02-08
- NEW DYSTONIC SYNDROME ASSOCIATED WITH BUTYRPHENONE THERAPY. 133516 02-15
- THIOPROPANATE**  
TREATMENT OF TARDIVE DYSKINESIA: II. SHORT-TERM EFFICACY OF DOPAMINE BLOCKING AGENTS HALOPERIDOL AND THIOPROPANATE. 122704 02-11
- THIORIDAZINE**  
PIGMENTARY RETINOPATHY ASSOCIATED WITH THIORIDAZINE ADMINISTRATION. 120823 02-15
- METHYLSERGIDE IN MANIA: A DOUBLE-BLIND COMPARISON WITH THIORIDAZINE. 121335 02-09
- NICOTINIC ACID, THIORIDAZINE, FLUOXYMESTERONE AND THEIR COMBINATIONS IN HOSPITALIZED GERIATRIC PATIENTS: A SYSTEMATIC CLINICAL STUDY. 130668 02-11
- CLINICAL STUDY OF THE ACTION OF THIORIDAZINE RETARD POLFA. 133462 02-07
- THIOXANTHENES**  
THE PLACE OF THIOXANTHENES AMONG THE THIOXANTHENES. 119171 02-09
- THIOXANTHENES**  
THE PLACE OF THIOXANTHENES AMONG THE THIOXANTHENES. 119171 02-09
- THOUGHT**  
THE STABILITY AND SENSITIVITY OF MEASURES OF THOUGHT, PERCEPTION AND EMOTIONAL AROUSAL. 120118 02-08
- THE EFFECTS OF DRUGS ON OBJECTIVE MEASURES OF THOUGHT DISORDER IN SCHIZOPHRENIC PATIENTS. 120120 02-08
- CHRONIC HALLUCINOGENIC DRUG USE AND THOUGHT DISTURBANCE. 126221 02-14
- THRESHOLD**  
THE ACTION OF SOME ANTICONVULSANT DRUGS ON COBALT INDUCED EPILEPSY AND ON THE BEMEGRIDE THRESHOLD IN ALERT CATS. 123631 02-03

- THRESHOLDS**  
EFFECT OF SALICYLATE ON AUDITORY DETECTION THRESHOLDS  
MEASURED BY CONDITIONED AVOIDANCE RESPONSES: SENSORY  
IMPAIRMENT OR MOTIVATION DECREMENT 132543 02-03
- THROMBOCYTOPENIA**  
FATAL IMMUNE THROMBOCYTOPENIA INDUCED BY ETHCHLORVYNOL 118898 02-15
- THROMBOPHLEBITIS**  
THROMBOPHLEBITIS WITH DIAZEPAM USED INTRAVENOUSLY. 127405 02-15
- THYMIDINE**  
INHIBITORY EFFECTS OF CHRONIC ADMINISTRATION OF MORPHINE ON  
URIDINE AND THYMIDINE INCORPORATING ABILITIES OF MOUSE LIVER  
AND BRAIN SUBCELLULAR FRACTIONS. 122245 02-03
- THYMOLEPTICS**  
STUDIES ON THE ACCUMULATION OF O-METHYLATED DOPAMINE AND  
NORADRENALINE IN THE RAT BRAIN FOLLOWING VARIOUS  
NEUROLEPTICS, THYMOLEPTICS AND ACEPERONE. 133129 02-03
- THYROID**  
THYROID FUNCTION AND THE RESPONSE TO LIOTHYRONINE IN  
DEPRESSION. 120994 02-13  
POTENTIATION OF AMITRIPTYLINE BY THYROID HORMONE. 120996 02-13  
THYROID ACTION ON BEHAVIORAL PHYSIOLOGICAL EFFECTS AND  
DISPOSITION OF PHENOTHIAZINES. 122238 02-04  
EFFECT OF SEDUXEN ON THE FUNCTIONAL STATE OF THE ADRENAL  
CORTEX AND THYROID GLAND. 125265 02-04  
THYROID IMPRIMINE CLINICAL AND CHEMICAL INTERACTION:  
EVIDENCE FOR A RECEPTOR DEFICIT IN DEPRESSION. 127216 02-09  
EFFECTS OF LITHIUM ON THYROID FUNCTION. 129445 02-13
- THYROIDECTOMY**  
THE INFLUENCE OF ADRENALECTOMY, HYPOPHYSECTOMY,  
THYROIDECTOMY, CASTRATION, AND TESTOSTERONE ON  
APOMORPHINE INDUCED AGGRESSIVE BEHAVIOUR IN THE RAT. 120790 02-04
- TICS**  
NOTES ON A CASE OF TICS (GILLES-DE-LA-TOURETTES SYNDROME)  
TREATED BY HALOPERIDOL. 133011 02-14
- TIDAL**  
MARIHUANA AND TIDAL VOLUME. 127406 02-13
- TIME**  
PREINJECTION TIME OF SCOPOLAMINE AND STEP-DOWN LATENCY IN  
MICE. 120097 02-04  
EFFECT OF CARBARYL (1-NAPHTHYL-N-METHYLCARBAMATE) ON  
PENTOBARBITAL INDUCED SLEEPING TIME AND SOME LIVER  
MICROSOMAL ENZYMES IN WHITE LEGHORN COCKERELS. 121836 02-03  
TIME DRUG MODULATIONS OF PHOTICALLY EVOKED AFTER-DISCHARGE  
PATTERNS. 122062 02-03  
TIME DEPENDENT CHANGES IN BRAIN 3H-NOREPINEPHRINE  
DISAPPEARANCE CAUSED BY L-DOPA ADMINISTRATION. 122170 02-03  
MARIHUANA AND ALCOHOL: TIME PRODUCTION AND MEMORY  
FUNCTIONS. 129830 02-14  
TESTING SOME IMPLICATIONS OF THE SENSORY PHYSIOLOGICAL MODEL  
OF THE TIME SENSE. 130354 02-14  
PENTOBARBITONE SLEEPING TIME AFTER HALOPERIDOL AND  
PROMETHAZINE. 133305 02-03
- TIMES**  
EFFECT OF PRETREATMENT WITH SPIRONOLACTONE, PHENOBARBITAL OR  
BETA-DIETHYLAMINOETHYL DIPHENYLPROPYL-ACETATE (SKF-525-A) ON  
TRITIUM LEVELS IN BLOOD, HEART AND LIVER OF RATS AT VARIOUS  
TIMES AFTER ADMINISTRATION OF 3H-DIGITOXIN. 121243 02-03
- TIMID**  
REDUCTION OF ANXIETY IN GENETICALLY TIMID DOGS: DRUG-INDUCED  
SCHIZOKINESIS AND AUTOKINESIS. 132527 02-04
- TIMING**  
EFFECTS OF A DOPAMINE DA-BETA-HYDROXYLASE INHIBITOR ON TIMING  
BEHAVIOUR. 120013 02-04
- EFFECTS OF SYSTEMIC ADMINISTRATION OF PROPRANOLOL ON THE  
TIMING BEHAVIOR (DRL-20) OF RATS. 132761 02-04
- TISSUE**  
UPTAKE AND UTILIZATION OF 3H-5-HYDROXYTRYPTOPHAN BY BRAIN  
TISSUE DURING DEVELOPMENT. 121278 02-03  
THE EFFECTS OF PROPRANOLOL AND ELECTRICAL STIMULATION ON THE  
CYCLIC 3,5 AMP CONTENT OF ISOLATED CEREBRAL TISSUE. 122357 02-03  
SUBSTRATE SELECTIVE AND TISSUE SELECTIVE INHIBITION OF  
MONOAMINE OXIDASE. 133212 02-03  
CYCLIC-AMP IN BRAIN AREAS: EFFECTS OF AMPHETAMINE AND  
NOREPINEPHRINE ASSESSED THROUGH THE USE OF MICROWAVE  
RADIATION AS A MEANS OF TISSUE FIXATION. 133713 02-03  
MARIJUANA EFFECTS ON NEURONS IN TISSUE CULTURE. 133943 02-03
- TISSUES**  
REGIONAL RELEASE OF AROMATIC AMINES FROM TISSUES OF THE RAT  
BRAIN IN VITRO. 120524 02-03  
DEVELOPMENT OF METHODOLOGY FOR ASSAY OF CANNABINOIDS IN  
BODY FLUIDS AND TISSUES. (UNPUBLISHED PAPER). 132370 02-06  
PERAZINE AND IMPRIMINE CONTENT IN THE TISSUES OF RATS OF  
DIFFERENT AGES. 133352 02-03  
HISTOENZYMOLOGIC STUDIES OF THE BRAIN TISSUES AND INTERNAL  
ORGANS OF EXPERIMENTAL ANIMALS IN A SINGULAR  
ADMINISTRATION OF LSD-25. 133505 02-03
- TOAD**  
EFFECTS OF PUROMYCIN ON LEARNING IN THE TOAD. 121507 02-04
- TOLBUTAMIDE**  
INHIBITION BY ETHYLMORPHINE AND PENTOBARBITONE IN VITRO OF  
THE METABOLISM OF (UREYL-14C)TOLBUTAMIDE BY HEPATIC  
MICROSOMAL PREPARATIONS FROM MALE AND FEMALE RATS  
TREATED WITH PHENOBARBITONE. 121181 02-03  
CHLORPROMAZINE INDUCED ALTERNATIONS OF CARBOHYDRATE  
METABOLISM: EFFECT OF CHLORPROMAZINE PRETREATMENT ON THE  
INSULIN RESPONSE TO GLUCOSE AND TOLBUTAMIDE IN THE  
ADRENALECTOMIZED RAT. (PH.D. DISSERTATION). 130182 02-03
- TOLERANCE**  
MORPHINE INDUCED INCREASES IN THE INCORPORATION OF 14C-  
TYROSINE INTO 14C-DOPAMINE AND 14C-NOREPINEPHRINE IN THE  
MOUSE BRAIN: ANTAGONISM BY NALOXONE AND TOLERANCE. 120358 02-03  
INHALATION INDUCED TOLERANCE AND PHYSICAL DEPENDENCE: THE  
HAZARD OF OPIATE SUFFUSED MARIHUANA. 127693 02-03  
LEARNED BEHAVIORAL TOLERANCE TO MARIHUANA IN RATS. 131281 02-04  
TOLERANCE TO DELTA9-THC UNDER DELAYED MATCHING-TO-SAMPLE  
TASKS IN CHIMPANZEES: EFFECTS OF DELAY LENGTH. 131450 02-04  
RELATIVE DEGREE OF TOLERANCE TO MORPHINE SULFATE AND  
METHADONE HYDROCHLORIDE IN THE RAT AND THE INTERACTION OF  
DEXAMETHASONE. 133293 02-04  
DEVELOPMENT OF BEHAVIOURAL TOLERANCE TO NICOTINE IN THE RAT. 133524 02-04
- TOLERANT**  
EFFECT OF 6-HYDROXYDOPAMINE ON CATECHOLAMINE  
CONCENTRATIONS AND BEHAVIOR IN THE MORPHINE TOLERANT RAT. 119048 02-04
- TONIC**  
TONIC STATUS-EPILEPTICUS PRECIPITATED BY INTRAVENOUS DIAZEPAM  
IN A CHILD WITH PETIT-MAL STATUS. 123629 02-13  
TONIC STATUS-EPILEPTICUS PRECIPITATED BY INTRAVENOUS  
BENZODIAZEPINE IN FIVE PATIENTS WITH LENNOX-GASTAUT  
SYNDROME. 123636 02-13  
REPORT ON A CASE OF STATUS-PSYCHOMOTRICUS WITH TONIC  
TWILIGHT ATTACKS IN DRUG OVERDOSE. 133331 02-15
- TORTICOLLIS**  
SPASMODIC TORTICOLLIS AND L-DOPA: RESULTS OF THERAPEUTIC TRIAL  
IN SIX PATIENTS. 119029 02-13

## Subject Index

- TOSYLATE**  
XYLAMIDINE TOSYLATE: DIFFERENTIAL ANTAGONISM OF THE HYPOTHERMIC EFFECTS OF N,N DIMETHYLTRYPTAMINE, BUFOTENINE, AND 5-METHOXYTRYPTAMINE. 133528 02-03
- TOURETTES**  
TREATMENT OF TOURETTES SYNDROME: WITH HALOPERIDOL, REVIEW OF 34 CASES. 131960 02-09
- TOXIC**  
LACK OF TOXIC EFFECT OF GUANETHIDINE ON NERVE CELLS AND SMALL INTENSELY FLUORESCENT CELLS IN CULTURES OF SYMPATHETIC GANGLIA OF NEWBORN RATS. 132656 02-03
- TOXICITY**  
HYPERTHERMIA IN D-AMPHETAMINE TOXICITY IN AGGREGATED MICE OF DIFFERENT STRAINS. 120364 02-03  
MORPHOLOGICAL DATA ON THE TOXICITY OF FLUPHENAZINE. 125259 02-05  
CENTRAL ATROPINE-LIKE TOXICITY IN COMBINED PSYCHOTROPIC DRUG ADMINISTRATION. 133123 02-15
- TOXICOLOGICAL**  
MANDRAX: CLINICAL, PHARMACOLOGICAL AND TOXICOLOGICAL ASPECTS: STUDY OF 106 OBSERVATIONS. 132903 02-07  
SOME PHARMACOLOGICAL AND TOXICOLOGICAL EFFECTS OF 1-TRANS-DELTA8-THC AND 1-TRANS-DELTA9-TETRAHYDROCANNABINOL IN LABORATORY RODENTS. 133290 02-05
- TOXICOLOGY**  
THE ANALYTICAL TOXICOLOGY OF ETHCHLORVYNOL. (PH.D. DISSERTATION). 130184 02-06  
TOXICOLOGY IN CANNABINOIDS. (UNPUBLISHED PAPER). 132372 02-15
- TRANQUILIZATION**  
THE EFFECT OF TRANQUILIZATION UPON TERRITORY MAINTENANCE IN THE MALE RED-WINGED BLACKBIRD (AGELAIUS-PHOENICEUS). 129868 02-04
- TRANQUILIZER**  
DISRUPTION OF A TEMPORAL DISCRIMINATION BY THE MINOR TRANQUILIZER, OXAZEPAM. 119982 02-04  
SINGLE VERSUS REPEATED DOSAGE OF THE MINOR TRANQUILIZER CHLORDIAZEPOXIDE (LIBRIUM). 120655 02-17  
FACTORS INFLUENCING RESPONSE TO MAJOR TRANQUILIZER MEDICATIONS. 123887 02-09  
SEDALUM IN PSYCHIATRY IN ITS CAPACITY AS TRANQUILIZER AND NEUROLEPTIC. 133173 02-07
- TRANQUILIZERS**  
BROMINATION OF PHENOTHIAZINE TRANQUILIZERS: A METHOD FOR SENSITIVE AND SPECIFIC DETECTION. 119053 02-06  
AID FOR ANGINA: TRANQUILIZERS? 121928 02-11  
EFFECT OF MINOR AND MAJOR TRANQUILIZERS ON SOMATOSENSORY EVOKED POTENTIALS. 124152 02-13  
DRUG THERAPY: SEDATIVES AND TRANQUILIZERS. 129465 02-10  
MAJOR AND MINOR TRANQUILIZERS IN THE TREATMENT OF ANXIETY STATES. 133218 02-11
- TRANQUILIZER**  
TRANQUILIZER INDUCED GALACTORRHEA. 121621 02-15  
A NEUROLOGICAL ANALYSIS OF THE ACTION OF TRANQUILIZER DERIVATIVES OF BENZODIAZEPINE. 133506 02-13
- TRANS-DELTA9-TETRAHYDROCANNABINOL**  
TRANSFORMATION OF FISCHER RAT EMBRYO CELLS BY THE COMBINED ACTION OF MURINE LEUKEMIA VIRUS AND (-) TRANS-DELTA9-TETRAHYDROCANNABINOL. 121287 02-03  
PHENITRONE: INEFFECTIVE BLOCKADE OF (-) TRANS-DELTA9-TETRAHYDROCANNABINOL IN MICE AND DOGS. 122448 02-03  
THE EFFECTS OF CHRONIC ADMINISTRATION OF TRANS-DELTA9-TETRAHYDROCANNABINOL ON BEHAVIOR AND THE CARDIOVASCULAR SYSTEM OF DOGS. 132719 02-03

## Psychopharmacology Abstracts

- TRANSAMINASE**  
INHIBITION OF GABA TRANSAMINASE AND SLEEP IN THE RAT. 124160 02-03
- TRANSAMINASES**  
SERUM TRANSAMINASES AND ALKALINE PHOSPHATASE IN SCHIZOPHRENIA. 118934 02-08
- TRANSAMINE**  
THE EFFECT OF TRANSAMINE ON THE MONOAMINE OXIDASE ACTIVITY AND PSYCHONEURAL BEHAVIOR IN RATS IN A LABYRINTH. 133674 02-04
- TRANSFORMATION**  
TRANSFORMATION OF FISCHER RAT EMBRYO CELLS BY THE COMBINED ACTION OF MURINE LEUKEMIA VIRUS AND (-) TRANS-DELTA9-TETRAHYDROCANNABINOL. 121287 02-03
- TRANSMISSION**  
CHLOROQUINE INDUCED DEPRESSION OF NEUROMUSCULAR TRANSMISSION. 120233 02-03  
EFFECT OF NONINHALATION NARCOTICS ON STIMULATION TRANSMISSION IN THE CORTICOSPINAL SYSTEM. 125261 02-03
- TRANSMITTERS**  
PSYCHOACTIVE DRUGS AND BRAIN NEUROCHEMICAL TRANSMITTERS. 121299 02-13
- TRANSPORT**  
EFFECTS OF PHENOTHIAZINES ON AMINO ACID TRANSPORT AND PROTEIN SYNTHESIS IN ISOLATED NERVE ENDINGS. 119056 02-03  
EFFECT OF RESERPINE ON THE TRANSPORT OF 5-HYDROXYTRYPTAMINE TO THE RAT BRAIN. 119305 02-03  
THE EFFECT OF PHENOBARBITAL ON INTESTINAL CALCIUM TRANSPORT. 121286 02-05  
ACTIVE TRANSPORT OF LYSERGIC ACID DIETHYLAMIDE. 125674 02-03
- TRANXENE**  
DIGITAL COMPUTER ANALYZED SLEEP ELECTROENCEPHALOGRAPH (SLEEP PRINTS) IN PREDICTING ANXIOLYTIC PROPERTIES OF CLORAZEPATE DIPOTASSIUM (TRANXENE). 132950 02-14  
SOMATOSENSORY EVOKED POTENTIAL: AN OBJECTIVE INDICATOR OF THE THERAPY EFFICACY OF A NEW PSYCHOTROPIC DRUG, CLORAZEPATE DIPOTASSIUM (TRANXENE). 132953 02-07
- TRANCYCPROMINE**  
TREATMENT OF PREVIOUSLY INTRACTABLE DEPRESSIONS WITH TRANCYCPROMINE AND LITHIUM. 125969 02-09
- TRANLYCYPROMINE**  
THE EFFECTS OF TRANLYCYPROMINE AND CHLORPROMAZINE UPON THE SPONTANEOUS MOTOR ACTIVITY OF MICE. 133624 02-04
- TRAUMA**  
THE USE OF PYRACETAM IN SUBJECTIVE SYNDROMES CAUSED BY CRANIAL TRAUMA OBSERVED IN THE PSYCHIATRIC SERVICE OF A GENERAL HOSPITAL. 121855 02-11  
EFFECTIVENESS OF DIAZEPAM AND METHYLPHENIDATE IN MULTIPLE DOSAGES IN MODIFYING INFANT TRAUMA EFFECTS. 134104 02-04
- TRAUMATIC**  
ALTERED NOREPINEPHRINE METABOLISM FOLLOWING EXPERIMENTAL SPINAL CORD INJURY. PART 2: PROTECTION AGAINST TRAUMATIC SPINAL CORD HEMORRHAGIC NECROSIS BY NOREPINEPHRINE SYNTHESIS BLOCKADE WITH ALPHA-METHYL-TYROSINE. 121067 02-03  
PREVENTION OF TRAUMATIC SHOCK WITH LEVOMEPRAMAZINE UNDER EXPERIMENTAL CONDITIONS. 125263 02-03
- TREATED**  
LIVIDO-RETICULARIS IN PARKINSONS DISEASE PATIENTS TREATED WITH AMANTADINE HYDROCHLORIDE. 119028 02-15  
FURTHER STUDIES IN CATS CHRONICALLY TREATED WITH P-CHLOROPHENYLALANINE (PCPA). 119391 02-03  
PHYSOSTIGMINE AND 1,1 DIMETHYL-4-PHENYLPIPERAZINIUM INDUCED PRESSOR RESPONSES AND CATECHOLAMINE RELEASE IN 6-HYDROXYDOPAMINE TREATED RATS. 120234 02-03  
EDEMA AND INCREASED PLASMA RENIN ACTIVITY IN LITHIUM TREATED PATIENTS. 120822 02-09  
INHIBITION BY ETHYLMORPHINE AND PENTOBARBITONE IN VITRO OF THE METABOLISM OF (UREYL-14C)TOLBUTAMIDE BY HEPATIC

- MICROSOMAL PREPARATIONS FROM MALE AND FEMALE RATS TREATED WITH PHENOBARBITONE. 121181 02-03
- IDIOPATHIC ORTHOSTATIC HYPOTENSION TREATED WITH LEVODOPA AND MAO INHIBITOR: A PRELIMINARY REPORT. 122102 02-13
- METABOLISM OF DICOUMAROL BY LIVER MICROSOMES FROM UNTREATED AND PHENOBARBITAL TREATED RATS. 122169 02-03
- ALTERED RESPONSE TO APOMORPHINE IN 6-HYDROXYDOPAMINE TREATED RATS. 122444 02-03
- CATECHOLAMINE METABOLISM IN AFFECTIVE DISORDERS - IV. PRELIMINARY STUDIES OF NOREPINEPHRINE METABOLISM IN DEPRESSED PATIENTS TREATED WITH AMITRIPTYLINE. 127215 02-09
- THE CHANGE OF BEHAVIOR PATTERN OF ALCOHOL ADDICTS TREATED WITH CYANAMIDE DOUBLE MEDICATION - OBSERVATIONS BY THEIR FAMILIES. 129088 02-11
- CATECHOLAMINE METABOLISM IN AFFECTIVE DISORDERS: A LONGITUDINAL STUDY OF A PATIENT TREATED WITH AMITRIPTYLINE AND ECT. 130109 02-09
- THE EFFECT OF NOREPINEPHRINE REPLENISHMENT ON ALPHA-METHYL-P-TYROSINE TREATED MONKEYS. 130110 02-04
- HYSTERICAL BLEPHAROSPASM TREATED BY PSYCHOTHERAPY AND CONDITIONING PROCEDURES IN A GROUP SETTING. 131347 02-10
- FRACTIONATION BY ZONAL CENTRIFUGATION OF BRAIN OF NORMAL RATS AND RATS TREATED WITH MORPHINE. 132642 02-03
- BRAIN STEM SEROTONIN DEPLETION AND PONTO-GENICULO-OCCIPITAL WAVE ACTIVITY IN THE CAT TREATED WITH RESERPINE. 132684 02-03
- NOTES ON A CASE OF TICS (GILLES-DE-LA-TOURETTES SYNDROME) TREATED BY HALOPERIDOL. 133011 02-14
- INTERGENERIC BEHAVIORAL DIFFERENCES AMONG METHAMPHETAMINE TREATED MICE. 133379 02-04
- A CASE OF EARLY OXAZEPAM ADDICTION TREATED IN THE OUTPATIENT CLINIC. 133450 02-15
- THE ELECTRIC INTERPHASIC BLOOD POTENTIAL FOR SODIUM AND POTASSIUM IONS IN PATIENTS TREATED WITH CHLORPROMAZINE FOR VARIOUS MENTAL DISORDERS. 133463 02-13
- DISSOCIATION OF VERTICAL AND HORIZONTAL COMPONENTS OF ACTIVITY IN RATS TREATED WITH LITHIUM CHLORIDE. 133521 02-04
- BRAIN BIOCHEMICAL CHANGES IN RATS TREATED WITH CHLORPROMAZINE AND ELECTROSHOCKED DURING EARLY POSTNATAL DEVELOPMENT. 133708 02-03
- A CONTROLLED STUDY ON THE POSSIBLE EFFECT OF DIHYDROERGOTAMINE AGAINST DRYNESS OF THE MOUTH IN PATIENTS TREATED WITH TRICYCLIC ANTIDEPRESSANTS. 134312 02-13
- TREATING**
- TREATING PHOBIAS -- WITH A DRUG. 119612 02-10
- COMMENTS ON THE ADVERSE EFFECT OF CONCURRENT PYRIDOXINE ADMINISTRATION ON THE EFFICACY OF L-DOPA IN TREATING PARKINSONISM. 133097 02-13
- TREATMENT**
- THE DENSITY AND ULTRASTRUCTURE OF THE PURKINJE CELLS FOLLOWING DIPHENYLHYDANTOIN TREATMENT IN ANIMALS AND MAN. 119002 02-03
- MEASUREMENT OF PHASIC INTEGRATED POTENTIALS (PIP) DURING TREATMENT WITH P-CHLOROPHENYLALANINE (PCPA). 119394 02-13
- IDENTIFICATION AND TREATMENT OF ACUTE PSYCHOTIC STATES SECONDARY TO THE USAGE OF OVER-THE-COUNTER SLEEPING PREPARATIONS. 120269 02-15
- ALTERED CARBOHYDRATE METABOLISM DURING TREATMENT WITH LITHIUM CARBONATE. 120754 02-13
- MBD TREATMENT EVALUATED. 120839 02-11
- TREATMENT OF PARKINSONS DISEASE WITH AMANTADINE AND L-DOPA. 121175 02-15
- A CLINICAL STUDY OF LIMBITROL IN THE TREATMENT OF ANXIETY/DEPRESSION IN GENERAL PRACTICE. 121309 02-10
- OXAZEPAM IN THE TREATMENT OF NEUROTIC DISTURBANCES AS WELL AS IN THE WITHDRAWAL MANAGEMENT OF ALCOHOLICS AND DRUG ADDICTS. 121600 02-10
- ACQUISITION AND PERFORMANCE EFFECTS OF SCOPOLAMINE AND OF TREATMENT WITHDRAWAL IN AVOIDANCE SITUATIONS. 122039 02-04
- THE BLACK CLOUD: THE RECOGNITION AND TREATMENT OF ENDOGENOUS DEPRESSION IN GENERAL PRACTICE. 122095 02-17
- N-PHENYL-N-BENZYL-4-AMINO-1-METHYLPYPERIDIN HCL (BAMIPINE) COMBINED WITH 1-CYCLOHEXYL-1-METHYL 2 METHYLAMINOETHANE (CHP) FOR THE INTERIM AND TERMINAL TREATMENT OF DEPRESSIVE SYNDROMES. 122296 02-07
- VARIATIONS IN BLOOD AND URINARY ELECTROLYTES IN THE COURSE OF TREATMENT WITH LITHIUM SALTS. 122313 02-13
- LITHIUM SALTS IN PSYCHIATRIC THERAPY: CONCERNING THE CURATIVE AND PREVENTIVE TREATMENT. 122315 02-09
- PROPHYLACTIC TREATMENT OF MANIC-DEPRESSIVE PSYCHOSIS BY LITHIUM CARBONATE: THEORETICAL AND PRACTICAL CONCERN OF VARIATIONS IN PLASMA CONCENTRATION. 122316 02-13
- A DRUG-INDUCED CEREBRAL REACTION: A CASE OF MYOCLONIC STATUS UNDER TREATMENT WITH TRICYCLIC ANTIDEPRESSIVES. 122340 02-15
- A COMPARISON OF LITHIUM CARBONATE AND CHLORPROMAZINE IN THE TREATMENT OF EXCITED SCHIZO-AFFECTIVES. 122662 02-08
- TREATMENT OF TARDIVE DYSKINESIA: II. SHORT-TERM EFFICACY OF DOPAMINE BLOCKING AGENTS HALOPERIDOL AND THIOPROPALATE. 122704 02-11
- MAINTENANCE PSYCHOTROPIC DRUGS IN THE PRESENCE OF ACTIVE TREATMENT PROGRAMS: A TRIPLE-BLIND WITHDRAWAL STUDY WITH LONG-TERM MENTAL PATIENTS. 122705 02-11
- ROLE OF ANTIDEPRESSANTS AND NEUROLEPTICS IN THE TREATMENT OF DEPRESSION. 122976 02-09
- COMMENTS ON TREATMENT: LITHIUM CARBONATE IN MANIC-DEPRESSIVE ILLNESS. 123351 02-09
- CLINICAL AND ELECTROENCEPHALOGRAPHIC EFFECTS OF ANAFRANIL TREATMENT IN DEPRESSION. 123884 02-13
- TREATMENT OF ACUTE ALCOHOL WITHDRAWAL WITH CHLORMETHIAZOLE (HEMINEVRIN). 123886 02-11
- THE EFFECTS OF ELECTROSHOCK THERAPY, LITHIUM AND TRICYCLIC ANTIDEPRESSANT TREATMENT ON PROBENECID INDUCED ACCUMULATIONS OF CSF AMINE METABOLITES IN DEPRESSED PATIENTS. (UNPUBLISHED PAPER). 125200 02-09
- TREATMENT OF RESTLESSNESS AND MOODINESS IN CHILDREN. 125954 02-14
- TREATMENT OF PREVIOUSLY INTRACTABLE DEPRESSIONS WITH TRANZYCPROMINE AND LITHIUM. 125969 02-09
- MASKED DEPRESSION IN VARIOUS FIELDS IN CLINICAL MEDICINE -- FROM THE STANDPOINT IN INTERNAL MEDICINE ESPECIALLY IN THE FIELDS OF TREATMENT. 125999 02-09
- PREMORBID ADJUSTMENT, PHENOTHIAZINE TREATMENT, AND REMISSION IN ACUTE SCHIZOPHRENICS. 126228 02-08
- TREATMENT OF CHOREIC MOVEMENTS WITH PERPHENAZINE. 128336 02-11
- THE TREATMENT OF PHENOTHIAZINE INDUCED TACHYCARDIA BY PROPRANOLOL. 128463 02-13
- TREATMENT OF TARDIVE DYSKINESIA: III. CLINICAL EFFICACY OF A DOPAMINE COMPETING AGENT, METHYLDOPA. 129833 02-13
- TREATMENT OF PARKINSONS DISEASE WITH AMANTADINE (SYMMETREL). 130020 02-11
- MANIA AS A MESSAGE: TREATMENT WITH FAMILY THERAPY AND LITHIUM CARBONATE. 130388 02-09
- PRENATAL CHLORPROMAZINE TREATMENT AND ADULT AVOIDANCE LEARNING. 131280 02-04



## Subject Index

## Psychopharmacology Abstracts

- TREATMENT OF TOURETTES SYNDROME: WITH HALOPERIDOL, REVIEW OF 34 CASES. 131960 02-09
- DECISIONS ABOUT DRUG THERAPY. III. SELECTION OF TREATMENT FOR PSYCHIATRIC INPATIENTS. 131961 02-14
- LITHIUM TREATMENT OF PSYCHOTIC CHILDREN AND ADOLESCENTS: A CONTROLLED CLINICAL TRIAL. 132189 02-09
- TYROSINE HYDROXYLATION IN THE RAT STRIATUM IN VITRO AND IN VIVO AFTER NIGRAL LESION AND CHLORPROMAZINE TREATMENT. 132683 02-03
- COMPARISON OF CARISOPRODOL, BUTABARBITAL, AND PLACEBO IN TREATMENT OF THE LOW BACK SYNDROME. 132713 02-11
- FLUSPIRILENE IN THE TREATMENT OF CHRONIC SCHIZOPHRENIC OUTPATIENTS. 132718 02-08
- AN ATTEMPT TO ADMINISTER NEUROLEPTICS WITH A PROLONGED EFFECT IN THE TREATMENT OF ACUTE PSYCHOTIC STATES. 132752 02-11
- THE USE OF A FIXED DOSAGE COMBINATION OF AMITRIPTYLINE AND CHLORDIAZEPOXIDE IN THE TREATMENT OF PATIENTS SUFFERING FROM ANXIETY AND DEPRESSION. 132754 02-09
- EXPERIMENTAL PSYCHOCLINICAL TREATMENT OF THE SEVERELY MENTALLY RETARDED WITH ARGININE-N-ACETYL-ASPARTATE (AAA). 132772 02-11
- TREATMENT OF PARKINSONS DISEASE WITH VIREGYT (AMANTADINE HYDROCHLORIDE). 132805 02-07
- DELIRIUM TREMENS: A COMPARISON OF INTRAVENOUS TREATMENT WITH DIAZEPAM AND CHLORDIAZEPOXIDE. 132869 02-11
- MOTIVATION IN THE TREATMENT OF ANXIOUS DEPRESSION. 132955 02-07
- A QUALITATIVE AND QUANTITATIVE EVALUATION OF AMANTADINE IN THE TREATMENT OF PARKINSONS DISEASE. 133071 02-11
- BEHAVIOR OF BIOPHYSICAL BLOOD PROPERTIES IN CHILDREN WITH MENTAL DISORDERS RECEIVING CHLORPROMAZINE TREATMENT. 133076 02-03
- LITHIUM IN TREATMENT AND PREVENTION OF AFFECTIVE DISORDERS. 133094 02-09
- ELENIUM-POLFA IN TREATMENT OF ALCOHOL WITHDRAWAL SYNDROMES. 133137 02-11
- MORBID JEALOUSY: CLINICAL TESTING OF TREATMENT WITH PROPERICIAZINE. 133172 02-11
- TREATMENT OF PARKINSONS DISEASE WITH L-DOPA AND DECARBOXYLASE INHIBITOR. 133198 02-13
- MAJOR AND MINOR TRANQUILIZERS IN THE TREATMENT OF ANXIETY STATES. 133218 02-11
- PIMOZIDE: A COMPARATIVE STUDY IN THE TREATMENT OF CHRONIC SCHIZOPHRENIC PATIENTS. 133220 02-07
- PRELIMINARY STUDY OF PERPHENAZINE ENANTHATE IN THE TREATMENT OF CHRONIC SCHIZOPHRENIA. 133261 02-07
- TREATMENT OF DEPRESSIONS WITH CHLORIMIPRAMINE: LITERATURE REVIEW AND CLINICAL STUDIES. 133315 02-07
- THE ADVANTAGES OF THE COMBINATION TREATMENT (L-DOPA AND DECARBOXYLASE INHIBITOR) IN THE PARKINSON SYNDROME. 133518 02-11
- TREATMENT OF PSYCHIC DISTURBANCES IN AGING INDIVIDUALS. 133642 02-11
- DRUGS IN THE TREATMENT OF DEPRESSION. 133963 02-09
- DEPOT PHENOTHIAZINE TREATMENT IN ACUTE PSYCHOSIS: A SEQUENTIAL COMPARATIVE STUDY. 134112 02-09
- TREATMENTS**  
THE ASTHENIC STATES AND ONE OF THEIR MODERN TREATMENTS. 121895 02-11
- TREMENS**  
DELIRIUM TREMENS: A COMPARISON OF INTRAVENOUS TREATMENT WITH DIAZEPAM AND CHLORDIAZEPOXIDE. 132869 02-11
- TREMOR**  
HARMINE TREMOR AFTER BRAIN MONOAMINE OXIDASE INHIBITION IN THE MOUSE. 120236 02-03
- THE EFFECT OF ELANTRINE, A NEW ANTIPARKINSONISM AGENT, ON DRUG-INDUCED TREMOR IN MICE. 132778 02-11
- TREMOR INHIBITION IN PARKINSON SYNDROME AFTER APOMORPHINE ADMINISTRATION UNDER L-DOPA AND DECARBOXYLASE INHIBITOR BASIC THERAPY. 133262 02-11
- PARKINSONS TREMOR, RELIEF BY AN ANTIAMINIC DRUG (BC-105): DISCUSSION ON THE BIOCHEMICAL PATHOGENESIS OF PARKINSONIAN TREMOR. 133517 02-11
- TREMORINE**  
THE EFFECTS OF SOME BETA ADRENERGIC BLOCKING AGENTS ON THE CENTRAL AND PERIPHERAL ACTIONS OF TREMORINE AND OXOTREMORINE. 132759 02-03
- TRENDS**  
BIOLOGIC PSYCHIATRY IN PERSPECTIVE: THE DANGERS OF SECTARIANISM IN PSYCHIATRY. V. SOME INFERRED TRENDS. 129401 02-17
- TRIBUTE**  
PERSPECTIVES IN NEUROPHARMACOLOGY: A TRIBUTE TO JULIUS AXELROD. 133110 02-17
- TRICHLOROFOS**  
RELATIVE POTENCY OF TRICHLOROFOS COMPARED TO PENTOBARBITAL AS A HYPNOTIC. 121985 02-07
- TRICHOMONACIDAL**  
DISULFIRAM LIKE EFFECTS OF TRICHOMONACIDAL DRUGS: A REVIEW AND DOUBLE-BLIND STUDY. 133603 02-11
- TRICYCLIC**  
OVERDOSAGE OF TRICYCLIC ANTIDEPRESSANTS: A REPORT OF TWO DEATHS AND A PROSPECTIVE STUDY OF 24 PATIENTS. 121976 02-15
- DOSE-RESPONSES AND RELATIONSHIPS BETWEEN ANTICHOLINERGIC ACTIVITY AND MOOD WITH TRICYCLIC ANTIDEPRESSANTS. 122193 02-14
- A DRUG-INDUCED CEREBRAL REACTION: A CASE OF MYOCLONIC STATUS UNDER TREATMENT WITH TRICYCLIC ANTIDEPRESSANTS. 122340 02-15
- BEHAVIOURAL AND BIOCHEMICAL COMPARISON OF AMPHETAMINE DERIVATIVES, COCAINE, BENZTROPINE, AND TRICYCLIC ANTIDEPRESSANT DRUGS. 122571 02-03
- THE EFFECTS OF ELECTROSHOCK THERAPY, LITHIUM AND TRICYCLIC ANTIDEPRESSANT TREATMENT ON PROBENECID INDUCED ACCUMULATIONS OF CSF AMINE METABOLITES IN DEPRESSED PATIENTS. (UNPUBLISHED PAPER). 125200 02-09
- HYPERTENSIVE EPISODES AFTER ADDING METHYLPHENIDATE (RITALIN) TO TRICYCLIC ANTIDEPRESSANTS: (REPORT OF THREE CASES AND REVIEW OF CLINICAL ADVANTAGES. 131348 02-15
- BLOCKING H<sub>3</sub>-NOREPINEPHRINE UPTAKE AND SOME GUANETHIDINE INDUCED EFFECTS WITH TRICYCLIC PSYCHOTHERAPEUTIC DRUGS. 133182 02-03
- SPECIES DIFFERENCES IN THE METABOLISM OF A TRICYCLIC PSYCHOTROPIC AGENT, SQ-11290-14C. 133718 02-13
- A CONTROLLED STUDY ON THE POSSIBLE EFFECT OF DIHYDROERGOTAMINE AGAINST DRYNESS OF THE MOUTH IN PATIENTS TREATED WITH TRICYCLIC ANTIDEPRESSANTS. 134312 02-13
- TRIFLUOPERAZINE**  
COMPARISON OF THE CLINICAL AND ELECTROENCEPHALOGRAPHICAL EFFECTS OF MOLINDONE AND TRIFLUOPERAZINE IN ACUTE SCHIZOPHRENIC PATIENTS. 120824 02-08
- EFFECTS OF CHLORPROMAZINE, TRIFLUOPERAZINE, PROMAZINE AND IMIPRAMINE ON THE PROPERTIES OF EXCITABLE MEMBRANES. 125258 02-03
- TRIHENXYPHENIDYL**  
EFFECTS OF TRIHENXYPHENIDYL ON SCHEDULE INDUCED ALCOHOL DRINKING BY RATS. 125531 02-03
- A DOUBLE-BLIND COMPARISON OF THE EFFICACY OF EX-10-029 AND TRIHENXYPHENIDYL HYDROCHLORIDE IN RELIEVING DRUG-INDUCED PARKINSONIAN SYMPTOMS. 132956 02-07
- TRILAFON**  
COMPARISON OF PERPHENAZINE (TRILAFON TABLETS) WITH PERPHENAZINE ENANTHATE (TRILAFON DEPOT INJECTION) IN A DOUBLE-BLIND TRIAL. 133351 02-08

**TRIMETHOXYBENZAMIDES**

SUBSTITUTED 3,4,5 TRIMETHOXYBENZAMIDES: CORRELATION BETWEEN INHIBITION OF PYRUVIC ACID OXIDATION AND ANTICONVULSANT ACTIVITY.

133745 02-03

**TRIPHOSPHATASE**

EFFECTS OF SOME ANALGESICS AND ANTIDEPRESSANTS ON THE NA<sub>2</sub> AND K<sub>2</sub> ADENOSINE TRIPHOSPHATASE FROM CORTICES OF BRAIN AND KIDNEY.

121668 02-13

**TRIPLE-BLIND**

MAINTENANCE PSYCHOTROPIC DRUGS IN THE PRESENCE OF ACTIVE TREATMENT PROGRAMS: A TRIPLE-BLIND WITHDRAWAL STUDY WITH LONG-TERM MENTAL PATIENTS.

122705 02-11

**TRITIUM**

EFFECT OF PRETREATMENT WITH SPIRONOLACTONE, PHENOBARBITAL OR BETA-DIETHYLAMINOETHYL DIPHENYLPROPYL-ACETATE (SKF-525-A) ON TRITIUM LEVELS IN BLOOD, HEART AND LIVER OF RATS AT VARIOUS TIMES AFTER ADMINISTRATION OF 3H-DIGITOXIN.

121243 02-03

**TRIUMPH**

JULIUS AXELROD: A TRIUMPH FOR CREATIVE RESEARCH.

133098 02-17

**TROPACOCAINE**

STRUCTURAL ANALYSIS OF TROPINES: STRUCTURE OF BENZOYL-TROPINE AND BENZOYL-PSI-TROPINE (TROPACOCAINE) AND THEIR CHOLINOLYTIC ACTIONS.

132802 02-01

**TROPINES**

STRUCTURAL ANALYSIS OF TROPINES: STRUCTURE OF BENZOYL-TROPINE AND BENZOYL-PSI-TROPINE (TROPACOCAINE) AND THEIR CHOLINOLYTIC ACTIONS.

132802 02-01

**TRYPTAMINE**

THE EFFECTS OF SOME TRYPTAMINE DERIVATIVES ON BRAIN MONOAMINES AND THEIR PRECURSOR AMINO ACIDS.

121279 02-03

THE EFFECTS OF METHYLATED TRYPTAMINE DERIVATIVES ON BRAINSTEM NEURONES.

121307 02-12

THE NORMAL OCCURRENCE OF TRYPTAMINE IN BRAIN AND ITS CONVERSION TO N-METHYL AND N-DIMETHYLTRYPTAMINE IN VITRO AND IN VIVO. (UNPUBLISHED PAPER).

126244 02-03

**TRYPTIC**

DISSOCIATION OF THE BEHAVIOURAL AND ENDOCRINE EFFECTS OF LYSINE VASOPRESSIN BY TRYPTIC DIGESTION.

133753 02-04

**TRYPTOPHAN**

EFFECT OF AMPHETAMINES ON TRYPTOPHAN CONCENTRATIONS IN MICE AND RATS.

119301 02-03

P-CHLOROAMPHETAMINE -- INHIBITION OF CEREBRAL TRYPTOPHAN HYDROXYLASE.

121354 02-03

TRYPTOPHAN TRIALS IN TESTS FOR EVALUATION OF ANTIDEPRESSANTS.

125257 02-04

THE EFFECTS OF ENVIRONMENTAL ISOLATION ON BEHAVIOR AND REGIONAL RAT BRAIN TYROSINE HYDROXYLASE AND TRYPTOPHAN HYDROXYLASE ACTIVITIES.

133715 02-03

**TUMOR**

PROLONGED METABOLISM OF PENTOBARBITAL IN ISOLATED PERFUSED LIVER OF TUMOR BEARING RATS.

122167 02-03

**TWILIGHT**

REPORT ON A CASE OF STATUS-PSYCHOMOTRICUS WITH TONIC TWILIGHT ATTACKS IN DRUG OVERDOSE.

133331 02-15

**TWO-CHOICE**

THE EFFECTS OF A MARIJUANA EXTRACT ON TWO-CHOICE DISCRIMINATION LEARNING IN THE SQUIRREL MONKEY.

131445 02-04

**TYPICAL**

A TYPICAL MANIFESTATIONS OF POSTURAL HYPOTENSION.

122728 02-15

**TYRAMINE**

OBSERVATIONS ON THE RELATION OF MIGRAINE AND EPILEPSY: AN ELECTROENCEPHALOGRAPHIC, PSYCHOLOGICAL, AND CLINICAL STUDY USING ORAL TYRAMINE.

123637 02-13

**TYROSINE**

EFFECT OF MORPHINE ON TYROSINE HYDROXYLASE ACTIVITY IN MOUSE BRAIN.

119033 02-03

TYROSINE HYDROXYLATION IN THE RAT STRIATUM IN VITRO AND IN VIVO AFTER NIGRAL LESION AND CHLORPROMAZINE TREATMENT.

132683 02-03

CHANGES IN TYROSINE HYDROXYLASE AND DOPA DECARBOXYLASE INDUCED BY PHARMACOLOGICAL AGENTS.

132706 02-03

THE EFFECTS OF ENVIRONMENTAL ISOLATION ON BEHAVIOR AND REGIONAL RAT BRAIN TYROSINE HYDROXYLASE AND TRYPTOPHAN HYDROXYLASE ACTIVITIES.

133715 02-03

**ULTRASTRUCTURAL**

STRUCTURAL AND ULTRASTRUCTURAL CHANGES IN DEVELOPING SYMPATHETIC GANGLIA INDUCED BY GUANETHIDINE.

132645 02-03

ULTRASTRUCTURAL CHANGES IN ISOLATED RAT BRAIN MITOCHONDRIA.

133048 02-03

**ULTRASTRUCTURE**

THE DENSITY AND ULTRASTRUCTURE OF THE PURKINJE CELLS FOLLOWING DIPHENYLHYDANTOIN TREATMENT IN ANIMALS AND MAN.

119002 02-03

**UMBILICAL**

VASOCONSTRICTION PRODUCED BY HALLUCINOGENS ON ISOLATED HUMAN AND SHEEP UMBILICAL VASCULATURE.

132994 02-13

**UNANESTHETIZED**

RESPIRATORY EFFECTS OF CHLORPROMAZINE IN UNANESTHETIZED DECEREBRATE CATS.

133292 02-03

**UNCONDITIONED**

DRUG EFFECTS ON UNCONDITIONED LIGHT AVOIDANCE IN THE RAT.

120787 02-04

**UNDECYLENATE**

FLUSPIRILENE AND PIPOTHAZINE UNDECYLENATE, TWO LONG-ACTING INJECTABLE NEUROLEPTICS: A DOUBLE-BLIND CONTROLLED TRIAL IN RESIDUAL SCHIZOPHRENIA.

121544 02-08

**UNIPOLAR**

BEHAVIORAL AND METABOLIC EFFECTS OF L-TRYPTOPHAN IN UNIPOLAR DEPRESSED PATIENTS. (UNPUBLISHED PAPER)

132989 02-09

**UNIT**

PALLIDAL AND TEGMENTAL INHIBITION OF OSCILLATORY SLOW WAVES AND UNIT ACTIVITY IN THE SUBTHALAMIC NUCLEUS.

122204 02-03

**UNPUNISHED**

PUNISHED AND UNPUNISHED OPERANT BEHAVIOR AFTER ATROPINE ADMINISTRATION TO THE VMH OF SQUIRREL MONKEYS.

132117 02-04

**UNRELATED**

HALOPERIDOL, CLOPENTHIXOL, AND CHLORPROMAZINE IN CHRONIC SCHIZOPHRENIA: CHEMICALLY UNRELATED ANTIPSYCHOTICS AS THERAPEUTIC ALTERNATIVES.

122209 02-08

**UNRESTRAINED**

EFFECTS OF L-DOPA ON THE EEG AND BRAIN AMINES OF UNRESTRAINED RATS.

121063 02-03

THE EFFECT OF L-DOPA ON CORTICAL AND SUBCORTICAL ELECTRICAL ACTIVITY IN NORMAL UNRESTRAINED RATS.

133294 02-03

**UNSTABLE**

LITHIUM CARBONATE IN EMOTIONALLY UNSTABLE CHARACTER DISORDER.

126232 02-09

**UNTREATED**

METABOLISM OF DICOUMAROL BY LIVER MICROSOMES FROM UNTREATED AND PHENOBARBITAL TREATED RATS.

122169 02-03

**UPTAKE**

UPTAKE AND LOSS OF 14C-DOPAMINE BY PLATELETS FROM CHILDREN WITH INFANTILE AUTISM.

119968 02-11

STERIC REQUIREMENTS FOR CATECHOLAMINE UPTAKE BY RAT BRAIN SYNAPTOSOMES: STUDIES WITH RIGID ANALOGS OF AMPHETAMINE.

120357 02-03

EFFECTS OF ANESTHETICS ON SODIUM UPTAKE INTO RAT BRAIN CORTEX IN VITRO.

121210 02-03

UPTAKE AND UTILIZATION OF 3H-5-HYDROXYTRYPTOPHAN BY BRAIN TISSUE DURING DEVELOPMENT.

121278 02-03

SYNAPTOSOMES FROM FOREBRAIN OF RATS WITH MIDBRAIN RAPHE LESIONS: SELECTIVE REDUCTION OF SEROTONIN UPTAKE.

124188 02-03

BLOCKING H3-NOREPINEPHRINE UPTAKE AND SOME GUANETHIDINE INDUCED EFFECTS WITH TRICYCLIC PSYCHOTHERAPEUTIC DRUGS.

133182 02-03

## Subject Index

- THE INTERACTION BETWEEN DESMETHYLIMIPRAMINE AND GUANETHIDINE ON THE RABBIT ILEUM. THE IMPORTANCE OF THE NORADRENALINE UPTAKE PROCESS IN THE REVERSAL OF GUANETHIDINE INDUCED ADRENERGIC NEURONE BLOCKADE. 133214 02-03
- EFFECT OF 5-HYDROXYDOPAMINE ON UPTAKE AND CONTENT OF SEROTONIN IN RAT STRIATUM. 133527 02-03
- AMANTADINE AND CATECHOLAMINE UPTAKE. 133767 02-03
- URBAN**  
PSYCHOACTIVE MEDICATION AND CONCERN: THE URBAN PHYSICIANS PRACTICAL RX FOR NEUROSES. 131345 02-10
- UREYL-14C**  
INHIBITION BY ETHYLMORPHINE AND PENTOBARBITONE IN VITRO OF THE METABOLISM OF (UREYL-14C)TOLBUTAMIDE BY HEPATIC MICROSOMAL PREPARATIONS FROM MALE AND FEMALE RATS TREATED WITH PHENOBARBITONE. 121181 02-03
- URIDINE**  
INHIBITORY EFFECTS OF CHRONIC ADMINISTRATION OF MORPHINE ON URIDINE AND THYMIDINE INCORPORATING ABILITIES OF MOUSE LIVER AND BRAIN SUBCELLULAR FRACTIONS. 122245 02-03
- URINARY**  
VARIATIONS IN BLOOD AND URINARY ELECTROLYTES IN THE COURSE OF TREATMENT WITH LITHIUM SALTS. 122313 02-13  
THE USE OF ANTIHISTAMINES FOR THE ALLEVIATION OF URINARY RETENTION CAUSED BY PSYCHOTROPIC DRUGS. 131574 02-15  
AN URINARY METABOLITE OF BROMAZEPAM. 133523 02-01
- URINE**  
A 3-O-METHYLATED CATECHOL METABOLITE OF DIPHENYLHYDANTOIN (DILANTIN) IN RAT URINE. 122235 02-03  
EXCRETION OF VANILLYL-MANDELIC ACID, HOMOVANILLIC ACID, N-METHYL-NICOTINAMIDE, AND N-METHYL-2-PYRIDONE-5-CARBOXAMIDE IN URINE OF VOLUNTARY TEST PERSONS AND PSYCHIATRIC PATIENTS BEFORE AND AFTER ADMINISTRATION OF METHIONINE. 133265 02-13
- USAGE**  
IDENTIFICATION AND TREATMENT OF ACUTE PSYCHOTIC STATES SECONDARY TO THE USAGE OF OVER-THE-COUNTER SLEEPING PREPARATIONS. 120269 02-15  
DRUG USAGE IN THE IRRITABLE COLON SYNDROME. 121779 02-17
- USERS**  
PERSISTENT DYSKINESIAS IN DRUG USERS. 120733 02-15
- UTILIZATION**  
UPTAKE AND UTILIZATION OF 3H-5-HYDROXYTRYPTOPHAN BY BRAIN TISSUE DURING DEVELOPMENT. 121278 02-03  
CEREBRAL AND PERIPHERAL UTILIZATION OF L-DOPA IN PATIENTS WITH PARKINSONISM, DEPRESSIVE OR MANIC SYNDROMES UNDER L-DOPA PERFUSION WITH OR WITHOUT A DECARBOXYLASE INHIBITOR. 133175 02-13  
PSYCHOTROPIC DRUG INFLUENCES ON BRAIN ACETYLCHOLINE UTILIZATION. 133474 02-03
- VALIDATION**  
PREDICTION OF RESPONSE TO PHENOTHIAZINES IN SCHIZOPHRENIA: A CROSS VALIDATION STUDY. 120698 02-08  
PREDICTION OF PSYCHIATRIC HOSPITALIZATION. II. THE HOSPITALIZATION PRONENESS SCALE: A CROSS VALIDATION. 134204 02-08
- VALUE**  
THE COMPARATIVE ANTIDEPRESSANT VALUE OF L-TRYPTOPHAN AND IMIPRAMINE WITH AND WITHOUT ATTEMPTED POTENTIATION BY LIOTHYRONINE. 120995 02-09
- VALUES**  
FALSE GLUCOSE VALUES WITH USE OF OXAZEPAM. 126339 02-15
- VANILLYL-MANDELIC**  
EXCRETION OF VANILLYL-MANDELIC ACID, HOMOVANILLIC ACID, N-METHYL-NICOTINAMIDE, AND N-METHYL-2-PYRIDONE-5-CARBOXAMIDE IN URINE OF VOLUNTARY TEST PERSONS AND PSYCHIATRIC PATIENTS BEFORE AND AFTER ADMINISTRATION OF METHIONINE. 133265 02-13
- VARIABLE**  
BIPHASIC EFFECTS OF DELTA9-TETRAHYDROCANNABINOL ON VARIABLE INTERVAL SCHEDULE PERFORMANCE IN RATS. (UNPUBLISHED PAPER 133171 02-04

## Psychopharmacology Abstracts

- VARIATION**  
CONTINGENT NEGATIVE VARIATION AMPLITUDES: MARIHUANA AND ALCOHOL. 129831 02-14
- VARIATIONS**  
INDUCTION OR REDUCTION OF CATECHOLAMINE ENZYMES: REGULATION OF CATECHOLAMINE TURNOVER BY VARIATIONS OF ENZYME LEVELS. 122222 02-03  
VARIATIONS IN BLOOD AND URINARY ELECTROLYTES IN THE COURSE OF TREATMENT WITH LITHIUM SALTS. 122313 02-13  
PROPHYLACTIC TREATMENT OF MANIC-DEPRESSIVE PSYCHOSIS BY LITHIUM CARBONATE: THEORETICAL AND PRACTICAL CONCERN OF VARIATIONS IN PLASMA CONCENTRATION. 122316 02-13  
BIOCHEMICAL AND PHARMACOLOGICAL VARIATIONS IN MANIC-DEPRESSIVE ILLNESS. 126500 02-09
- VARIABLE**  
THE VARIABLE EFFECTS OF LSD-25 ON THE BEHAVIOR OF A HETEROGENEOUS GROUP OF CHILDHOOD SCHIZOPHRENICS. 121403 02-12
- VASCULATURE**  
VASOCONSTRICTION PRODUCED BY HALLUCINOGENS ON ISOLATED HUMAN AND SHEEP UMBILICAL VASCULATURE. 132994 02-13
- VASOCONSTRICTION**  
VASOCONSTRICTION PRODUCED BY HALLUCINOGENS ON ISOLATED HUMAN AND SHEEP UMBILICAL VASCULATURE. 132994 02-13
- VASOPRESSIN**  
DISSOCIATION OF THE BEHAVIOURAL AND ENDOCRINE EFFECTS OF LYSINE VASOPRESSIN BY TRYPTIC DIGESTION. 133753 02-04
- VENOMOTOR**  
CLINICAL PHARMACOLOGY OF 5-HYDROXYTRYPTAMINE AND CATECHOLAMINES VENOMOTOR RECEPTORS. 133749 02-13
- VENTRICLE**  
SCHEDULE CONTROLLED AND DRUG-INDUCED RELEASE OF NOREPINEPHRINE-7-3H INTO THE LATERAL VENTRICLE OF RATS. 132689 02-03
- VENTRICLES**  
THE ONTOGENY OF 14C-DOPAMINE CLEARANCE FROM THE CEREBRAL VENTRICLES OF DEVELOPING RHESUS MONKEYS. 120218 02-03
- VERONAMINE**  
CARDIOVASCULAR EFFECTS OF VERONAMINE. 133215 02-03
- VERTICAL**  
DISSOCIATION OF VERTICAL AND HORIZONTAL COMPONENTS OF ACTIVITY IN RATS TREATED WITH LITHIUM CHLORIDE. 133521 02-04
- VESTIBULO-OCULOMOTOR**  
RHYTHMIC ACTIVITY OF THE VESTIBULO-OCULOMOTOR SYSTEM INDUCED BY A CHOLINERGIC DRUG. 132164 02-03
- VIRAL**  
MICROSOMAL PENTOBARBITAL HYDROXYLASE ACTIVITY IN ACUTE VIRAL HEPATITIS. 121288 02-15
- VIREGYT**  
TREATMENT OF PARKINSONS DISEASE WITH VIREGYT (AMANTADINE HYDROCHLORIDE). 132805 02-07
- VIRUS**  
TRANSFORMATION OF FISCHER RAT EMBRYO CELLS BY THE COMBINED ACTION OF MURINE LEUKEMIA VIRUS AND (-) TRANS-DELTA9-TETRAHYDROCANNABINOL. 121287 02-03
- VISUAL**  
EFFECTS OF PENTOBARBITAL ON THE VISUAL EVOKED RESPONSE IN THE AVIAN OPTIC TECTUM. 122012 02-03
- VMH**  
PUNISHED AND UNPUNISHED OPERANT BEHAVIOR AFTER ATROPINE ADMINISTRATION TO THE VMH OF SQUIRREL MONKEYS. 132117 02-04
- VOLUNTARY**  
EXCRETION OF VANILLYL-MANDELIC ACID, HOMOVANILLIC ACID, N-METHYL-NICOTINAMIDE, AND N-METHYL-2-PYRIDONE-5-CARBOXAMIDE IN URINE OF VOLUNTARY TEST PERSONS AND PSYCHIATRIC PATIENTS BEFORE AND AFTER ADMINISTRATION OF METHIONINE. 133265 02-13
- VOLUNTEERS**  
EEG AND NEUROPHYSIOLOGICAL STUDIES OF LITHIUM IN NORMAL VOLUNTEERS. 122987 02-09

- VOTE**  
A VOTE AGAINST ANTISUBSTITUTION REPEAL. 122079 02-17
- WAKING**  
THE RESPECTIVE INVOLVEMENT OF NORADRENALINE AND ITS DEAMINATED METABOLITES IN WAKING AND PARADOXICAL SLEEP: A NEUROPHARMACOLOGICAL MODEL. 119683 02-03
- WATER**  
MAGNESIUM PEMOLINE: EFFECTS OF A BROAD RANGE OF DOSES ON WATER MAZE PERFORMANCE. 120018 02-04  
EFFECTS OF BARBITAL ON DEPRIVATION INDUCED WATER CONSUMPTION BY RATS. 122033 02-04  
EFFECT OF METHAMPHETAMINE ON WATER CONSUMPTION. 130856 02-05  
DELTA9-TETRAHYDROCANNABINOL USED AS DISCRIMINATIVE STIMULUS FOR RATS IN POSITION LEARNING IN A T-SHAPED WATER MAZE. 133547 02-04
- WATER-SOLUBLE**  
WATER-SOLUBLE DERIVATIVES OF DELTA1-TETRAHYDROCANNABINOL. 132878 02-06
- WAVE**  
BRAIN STEM SEROTONIN DEPLETION AND PONTO-GENICULO-OCCIPITAL WAVE ACTIVITY IN THE CAT TREATED WITH RESERPINE. 132684 02-03  
AN ANALYSIS OF THE EFFECT OF RESERPINE UPON PONTO-GENICULO-OCCIPITAL WAVE ACTIVITY IN THE CAT. 132685 02-03
- WAVES**  
PALLIDAL AND TEGMENTAL INHIBITION OF OSCILLATORY SLOW WAVES AND UNIT ACTIVITY IN THE SUBTHALAMIC NUCLEUS. 122204 02-03
- WEIGHT**  
EFFECTIVENESS OF WEIGHT REDUCTION INVOLVING DIET PILLS. 132958 02-11  
LITHIUM, WEIGHT GAIN, AND SERUM INSULIN IN MANIC-DEPRESSIVE PATIENTS. 134310 02-15
- WELL-PRACTICED**  
EFFECTS OF METHAMPHETAMINE ON WELL-PRACTICED DISCRIMINATION CONDITIONING OF THE EYELID RESPONSE. 122397 02-14
- WHOLE-BODY**  
WHOLE-BODY AUTORADIOGRAPHY OF THE PREGNANT MOUSE AFTER ADMINISTRATION OF C14-DELTA9-THC. 133727 02-03
- WING**  
MICROCIRCULATORY RESPONSES IN THE BAT WING TO GLUCAGON WITH AND WITHOUT BARBITURATE ANESTHESIA (36515). 121289 02-03
- WITHDRAWAL**  
OXAZEPAM IN THE TREATMENT OF NEUROTIC DISTURBANCES AS WELL AS IN THE WITHDRAWAL MANAGEMENT OF ALCOHOLICS AND DRUG ADDICTS. 121600 02-10  
ACQUISITION AND PERFORMANCE EFFECTS OF SCOPOLAMINE AND OF TREATMENT WITHDRAWAL IN AVOIDANCE SITUATIONS. 122039 02-04  
FAILURE OF AN OPIATE TO PROTECT MICE AGAINST NALOXONE PRECIPITATED WITHDRAWAL. 122184 02-04  
MAINTENANCE PSYCHOTROPIC DRUGS IN THE PRESENCE OF ACTIVE TREATMENT PROGRAMS: A TRIPLE-BLIND WITHDRAWAL STUDY WITH LONG-TERM MENTAL PATIENTS. 122705 02-11  
TREATMENT OF ACUTE ALCOHOL WITHDRAWAL WITH CHLORMETHIAZOLE (HEMINEVRIN). 123886 02-11  
AMPHETAMINE WITHDRAWAL. 124254 02-14  
CHLORMETHIAZOLE, SLEEP, AND DRUG WITHDRAWAL. 126197 02-14  
14C-CATECHOLAMINE SYNTHESIS IN MOUSE BRAIN DURING MORPHINE WITHDRAWAL. 127206 02-05  
CHANGES IN OPERANT BEHAVIOR AS AN INDEX OF A WITHDRAWAL STATE FROM MORPHINE IN RATS. 127528 02-04  
ELENIUM-POLFA IN TREATMENT OF ALCOHOL WITHDRAWAL SYNDROMES. 133137 02-11
- WORK**  
WORK STUDY IN THE ASSESSMENT OF THE EFFECTS OF PHENOTHIAZINES IN SCHIZOPHRENIA. 127856 02-08
- THE EFFECT OF OXAZEPAM ON INTERRUPTED DAY SLEEP AFTER NIGHT WORK. 132785 02-14
- WORKER**  
THE BEHAVIOR OF WORKER AND NON-WORKER RATS UNDER THE INFLUENCE OF (-)DELTA9-TRANS-TETRAHYDROCANNABINOL, CHLORPROMAZINE AND AMYLOBARBITONE. 119981 02-04
- XYLAMIDINE**  
XYLAMIDINE TOSYLATE: DIFFERENTIAL ANTAGONISM OF THE HYPOTHERMIC EFFECTS OF N,N DIMETHYLTRYPTAMINE, BUFOTENINE, AND 5-METHOXYTRYPTAMINE. 133528 02-03
- Y-MAZE**  
SEROTONERGIC AND CHOLINERGIC INVOLVEMENT IN HABITUATION OF ACTIVITY AND SPONTANEOUS ALTERNATION OF RATS IN A Y-MAZE. 131131 02-03
- Y-4153**  
CLINICAL EVALUATION OF A NEW PSYCHOTROPIC DRUG, Y-4153 - COMPARATIVE STUDY WITH CHLORPROMAZINE USING A DOUBLE-BLIND METHOD. 120632 02-08
- YOUNG**  
LITHIUM AND CHLORPROMAZINE: A CONTROLLED Crossover STUDY OF HYPERACTIVE SEVERELY DISTURBED YOUNG CHILDREN. 131003 02-11
- YOUNGER**  
BUTISOL SODIUM VS. LIBRIUM AMONG GERIATRIC AND YOUNGER OUTPATIENTS AND NURSING HOME PATIENTS. 123885 02-10
- ZONAL**  
FRACTIONATION BY ZONAL CENTRIFUGATION OF BRAIN OF NORMAL RATS AND RATS TREATED WITH MORPHINE. 132642 02-03
- 1-CYCLOHEXYL-1-METHYL**  
N-PHENYL-N-BENZYL-4-AMINO-1-METHYLPYPERIDIN HCL (BAMIPINE) COMBINED WITH 1-CYCLOHEXYL-1-METHYL 2 METHYLAMINOETHANE (CHP) FOR THE INTERIM AND TERMINAL TREATMENT OF DEPRESSIVE SYNDROMES. 122296 02-07
- 1-METHYL-7-NITRO-5-PHENYL-1**  
PHARMACOLOGICAL STUDIES ON 1-METHYL-7-NITRO-5-PHENYL-1,3-DIHYDRO-2H 1,4-BENZODIAZEPIN-2-ONE (S-1530). 133670 02-02
- 1-NAPHTHOL**  
OXIDATION AND GLUCURONIDATION OF CERTAIN DRUGS IN VARIOUS SUBCELLULAR FRACTIONS OF RAT LIVER: BINDING OF DESMETHYLIMIPRAMINE AND HEXOBARBITAL TO CYTOCHROME-P-450 AND OXIDATION AND GLUCURONIDATION OF DESMETHYLIMIPRAMINE, AMINOPYRINE, P-NITROPHENOL AND 1-NAPHTHOL. 124120 02-03
- 1-NAPHTHYL-N-METHYLCARBAMATE**  
EFFECT OF CARBARYL (1-NAPHTHYL-N-METHYLCARBAMATE) ON PENTOBARBITAL INDUCED SLEEPING TIME AND SOME LIVER MICROSOmal ENZYMES IN WHITE LEGHORN COCKERELS. 121836 02-03
- 1-TRANS-DELTA8-THC**  
SOME PHARMACOLOGICAL AND TOXICOLOGICAL EFFECTS OF 1-TRANS-DELTA8-THC AND 1-TRANS-DELTA9-TETRAHYDROCANNABINOL IN LABORATORY RODENTS. 133290 02-05
- 1-TRANS-DELTA9-TETRAHYDROCANNABINOL**  
SOME PHARMACOLOGICAL AND TOXICOLOGICAL EFFECTS OF 1-TRANS-DELTA8-THC AND 1-TRANS-DELTA9-TETRAHYDROCANNABINOL IN LABORATORY RODENTS. 133290 02-05
- 14C-CATECHOLAMINE**  
14C-CATECHOLAMINE SYNTHESIS IN MOUSE BRAIN DURING MORPHINE WITHDRAWAL. 127206 02-05
- 14C-DOPA**  
MECHANISMS FOR THE EFFLUX OF 14C-DOPA AND 14C-DOPAMINE FROM THE CSF OF RHESUS MONKEYS. 118853 02-03
- 14C-DOPAMINE**  
MECHANISMS FOR THE EFFLUX OF 14C-DOPA AND 14C-DOPAMINE FROM THE CSF OF RHESUS MONKEYS. 118853 02-03  
UPTAKE AND LOSS OF 14C-DOPAMINE BY PLATELETS FROM CHILDREN WITH INFANTILE AUTISM. 119968 02-11  
THE ONTOGENY OF 14C-DOPAMINE CLEARANCE FROM THE CEREBRAL VENTRICLES OF DEVELOPING RHESUS MONKEYS. 120218 02-03



# Subject Index

# Psychopharmacology Abstracts

- MORPHINE INDUCED INCREASES IN THE INCORPORATION OF 14C-TYROSINE INTO 14C-DOPAMINE AND 14C-NOREPINEPHRINE IN THE MOUSE BRAIN: ANTAGONISM BY NALOXONE AND TOLERANCE. 120358 02-03
- 14C-NOREPINEPHRINE**  
MORPHINE INDUCED INCREASES IN THE INCORPORATION OF 14C-TYROSINE INTO 14C-DOPAMINE AND 14C-NOREPINEPHRINE IN THE MOUSE BRAIN: ANTAGONISM BY NALOXONE AND TOLERANCE. 120358 02-03
- 14C-TYROSINE**  
MORPHINE INDUCED INCREASES IN THE INCORPORATION OF 14C-TYROSINE INTO 14C-DOPAMINE AND 14C-NOREPINEPHRINE IN THE MOUSE BRAIN: ANTAGONISM BY NALOXONE AND TOLERANCE. 120358 02-03
- 3-AZABICYCLONON-3-YL**  
CENTRAL ANTICHOLINERGIC ACTIVITY OF 2,2-DIPHENYL 4-(3-AZABICYCLONON-3-YL) BUTYRAMIDE HYDROCHLORIDE (SC-13639). 133303 02-02
- 3-O-METHYLATED**  
A 3-O-METHYLATED CATECHOL METABOLITE OF DIPHENYLHYDANTOIN (DILANTIN) IN RAT URINE. 122235 02-03
- 3H-CHLORPROMAZINE**  
PASSAGE OF 3H-CHLORPROMAZINE AND 3H-DELTA9-TETRAHYDROCANNABINOL INTO THE HAIR (FUR) OF VARIOUS MAMMALS. 123033 02-03
- 3H-DELTA9-TETRAHYDROCANNABINOL**  
PASSAGE OF 3H-CHLORPROMAZINE AND 3H-DELTA9-TETRAHYDROCANNABINOL INTO THE HAIR (FUR) OF VARIOUS MAMMALS. 123033 02-03
- 3H-DIGITOXIN**  
EFFECT OF PRETREATMENT WITH SPIRONOLACTONE, PHENOBARBITAL OR BETA-DIETHYLAMINOETHYL DIPHENYLPROPYL-ACETATE (SKF-525-A) ON TRITIUM LEVELS IN BLOOD, HEART AND LIVER OF RATS AT VARIOUS TIMES AFTER ADMINISTRATION OF 3H-DIGITOXIN. 121243 02-03
- 3H-HISTAMINE**  
EFFECT OF L-DIHYDROXYPHENYLALANINE ON METHYLATION OF 3H-NOREPINEPHRINE AND 3H-HISTAMINE. 122168 02-03
- 3H-NOREPINEPHRINE**  
EFFECT OF L-DIHYDROXYPHENYLALANINE ON METHYLATION OF 3H-NOREPINEPHRINE AND 3H-HISTAMINE. 122168 02-03  
TIME DEPENDENT CHANGES IN BRAIN 3H-NOREPINEPHRINE DISAPPEARANCE CAUSED BY L-DOPA ADMINISTRATION. 122170 02-03
- 3H-5-HYDROXYTRYPTOPHAN**  
UPTAKE AND UTILIZATION OF 3H-5-HYDROXYTRYPTOPHAN BY BRAIN TISSUE DURING DEVELOPMENT. 121278 02-03
- 4-BENZODIAZEPIN-2-ONE**  
PHARMACOLOGICAL STUDIES ON 1-METHYL-7-NITRO-5-PHENYL-1,3-DIHYDRO-2H-1,4-BENZODIAZEPIN-2-ONE (S-1530). 133670 02-02
- 4H-5-TRIAZOLOBENZODIAZEPINE**  
PHARMACODYNAMIC EFFECTS OF 8-CHLORO-6-PHENYL 4H-5-TRIAZOLOBENZODIAZEPINE (D-40TA), A NEW CENTRAL DEPRESSANT. 131056 02-02
- 5-HT**  
THE EFFECTS OF SOME DRUGS AFFECTING BRAIN 5-HT ON THE AGGRESSIVE BEHAVIOR AND SPONTANEOUS ELECTRICAL ACTIVITY OF THE CENTRAL NERVOUS SYSTEM OF THE ANT, FORMICA-RUFA. 120812 02-04
- 5-HTOL**  
ETHANOL PREFERENCE IN THE RAT: INTERACTIONS BETWEEN BRAIN SEROTONIN AND ETHANOL, ACETALDEHYDE, PARALDEHYDE, 5-HTP AND 5-HTOL. 132682 02-04
- 5-HTP**  
ETHANOL PREFERENCE IN THE RAT: INTERACTIONS BETWEEN BRAIN SEROTONIN AND ETHANOL, ACETALDEHYDE, PARALDEHYDE, 5-HTP AND 5-HTOL. 132682 02-04
- 5-HYDROXYDOPAMINE**  
EFFECT OF 5-HYDROXYDOPAMINE ON UPTAKE AND CONTENT OF SEROTONIN IN RAT STRIATUM. 133527 02-03
- 5-HYDROXYINDOLEACETIC**  
THE EFFECTS OF CHRONIC IMIPRAMINE ADMINISTRATION ON RAT BRAIN LEVELS OF SEROTONIN, 5-HYDROXYINDOLEACETIC ACID, NOREPINEPHRINE AND DOPAMINE. 120359 02-03
- THE EFFECT OF DIPHENYLHYDANTOIN ON THE CLINICAL MANIFESTATIONS AND EXCRETION OF 5-HYDROXYINDOLEACETIC ACID IN PARKINSONS DISEASE. 132808 02-11
- 5-HYDROXYTRYPTAMINE**  
EFFECT OF RESERPINE ON THE TRANSPORT OF 5-HYDROXYTRYPTAMINE TO THE RAT BRAIN. 119305 02-03
- SPECIES DIFFERENCE IN THE LOWERING OF BRAIN 5-HYDROXYTRYPTAMINE BY M-CHLOROAMPHETAMINE. 119306 02-03
- THE MICROELECTROPHORETIC ADMINISTRATION OF NORADRENALINE, 5-HYDROXYTRYPTAMINE, ACETYLCHOLINE AND GLYCINE TO SACRAL PARASYMPATHETIC PREGANGLIONIC NEURONS. 132153 02-03
- CLINICAL PHARMACOLOGY OF 5-HYDROXYTRYPTAMINE AND CATECHOLAMINES VENOMOTOR RECEPTORS. 133749 02-13
- 5-METHOXYTRYPTAMINE**  
XYLAMIDINE TOSYLATE: DIFFERENTIAL ANTAGONISM OF THE HYPOTHERMIC EFFECTS OF N,N-DIMETHYLTRYPTAMINE, BUFOTENINE, AND 5-METHOXYTRYPTAMINE. 133528 02-03
- 5-OXYTRYPTOPHANDECARBOXYLASE**  
EFFECT OF THE IMIPRAMINE GROUP OF ANTIDEPRESSANTS ON THE SEROTONIN LEVEL AND ACTIVITY OF 5-OXYTRYPTOPHANDECARBOXYLASE IN THE BRAIN OF ALBINO RATS. 125260 02-03
- 6-HYDROXYDOPAMINE**  
EFFECT OF 6-HYDROXYDOPAMINE ON CATECHOLAMINE CONCENTRATIONS AND BEHAVIOR IN THE MORPHINE TOLERANT RAT. 119048 02-04
- PHYSOSTIGMINE AND 1,1-DIMETHYL-4-PHENYLPIPERAZINIUM INDUCED PRESSOR RESPONSES AND CATECHOLAMINE RELEASE IN 6-HYDROXYDOPAMINE TREATED RATS. 120234 02-03
- CENTRAL ACTIONS OF 6-HYDROXYDOPAMINE AND OTHER PHENYLETHYLAMINE DERIVATIVES ON BODY TEMPERATURE IN THE RAT. 120362 02-03
- DEGENERATION OF CENTRAL NORADRENALINE NEURONS AFTER 6-HYDROXYDOPAMINE IN NEWBORN ANIMALS. 122225 02-03
- PROTECTION BY DESIPRAMINE OF 6-HYDROXYDOPAMINE INDUCED DAMAGE TO ADRENERGIC NERVE TERMINALS IN MOUSE HEART. 122229 02-03
- 5,6-DIHYDROXYINDOLE FORMATION FROM OXIDIZED 6-HYDROXYDOPAMINE. 122237 02-03
- EFFECTS OF INTRAVENTRICULARLY INJECTED 6-HYDROXYDOPAMINE OR MIDBRAIN RAPHE LESION ON MORPHINE ANALGESIA IN RATS. 122396 02-03
- ALTERED RESPONSE TO APOMORPHINE IN 6-HYDROXYDOPAMINE TREATED RATS. 122444 02-03
- SHOCK INDUCED AGGRESSION: EFFECTS OF 6-HYDROXYDOPAMINE AND OTHER PHARMACOLOGICAL AGENTS. 132680 02-04
- DEFICITS IN FEEDING BEHAVIOR AFTER INTRAVENTRICULAR INJECTION OF 6-HYDROXYDOPAMINE IN RATS. 133750 02-03
- 6-METHOXY**  
6-METHOXY 1,2,3,4-TETRAHYDRO-BETA-CARBOLINE - A SEROTONIN ELEVATOR. 124272 02-03
- 8-CHLORO-6-PHENYL**  
PHARMACODYNAMIC EFFECTS OF 8-CHLORO-6-PHENYL 4H-5-TRIAZOLOBENZODIAZEPINE (D-40TA), A NEW CENTRAL DEPRESSANT. 131056 02-02
- 8-CHLORO-6-PHENYL 4H-5-TRIAZOLOBENZODIAZEPINE**  
FURTHER PHARMACOLOGICAL STUDY ON ANTIAGGRESSIVE, SEDATIVE AND MUSCLE RELAXANT 8-CHLORO-6-PHENYL 4H-5-TRIAZOLOBENZODIAZEPINE (D-40TA) IN EXPERIMENTAL ANIMALS: COMPARATIVE STUDY ON POTENCY AND DURATION. 130909 02-04

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